

Contemporary Dentistry

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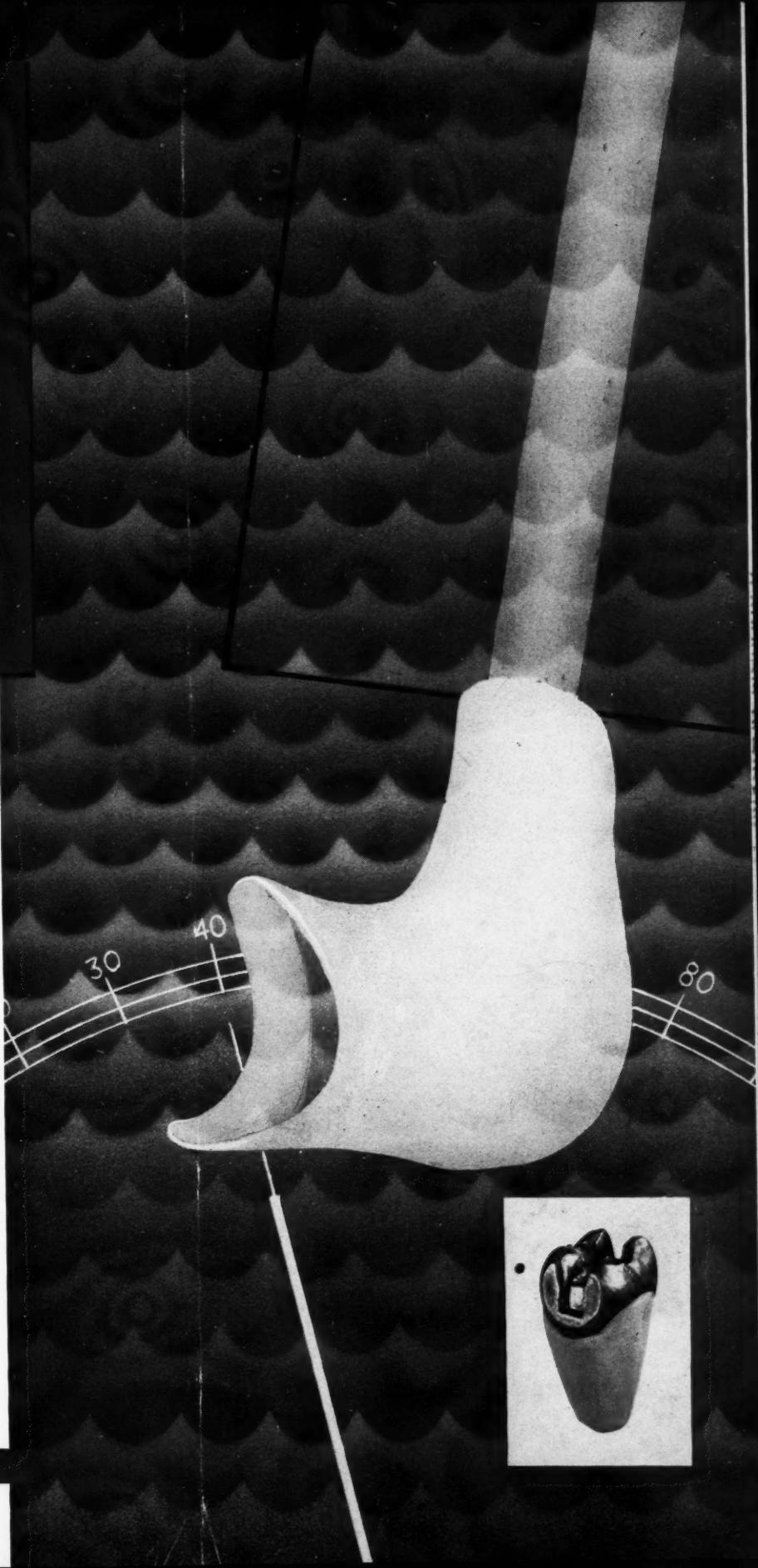
September 1951

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pages 394-400.*



... suggested procedure for simplified tooth selection

1 On the wax bite rim, inscribe the position of the central axis of each cuspid.

One of the popular procedures followed for these guide lines is to place a straight edge at the alae of the nose and parallel to the central axis of the nose. This line continued to bite block will in 75% to 80% of general cases correspond to the central axes of canines.

A. The millimeter measurement taken between the inscribed lines will correspond invariably to the numerical identification of the proper Five-Phase Anterior mold.

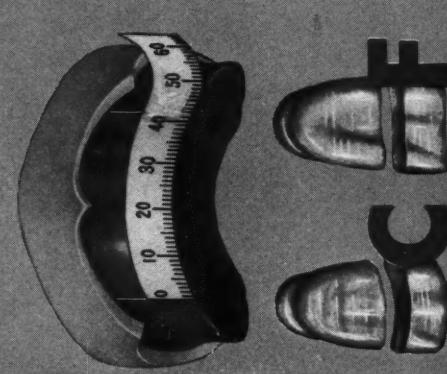
2

The length of the upper anteriors is the measure of distance between the edge of the wax bite rim and high lip line.

3

Dominant labial character (Curved or Flat) may be obtained from pre-sedentulous records or if none exists, the dominant labial characteristics of near blood-relatives will serve as a guide.

Because of the co-ordinate size system and the co-acting proximals of Five-Phase Anteriors, you can quickly select any combination of flat or curved centrals, laterals and canines to create personalized dentures for your patients.



WIDTH OF 6 ¹ CROWNED FLAT	36 MM	39 MM	40 MM	42 MM	43 MM	45 MM	46 MM	48 MM	51 MM
LNG	$\frac{L36}{C}$	$\frac{L39}{C}$	$\frac{L42}{C}$	$\frac{L45}{C}$	$\frac{L45}{F}$	$\frac{L48}{C}$	$\frac{L48}{F}$	$\frac{L51}{C}$	$\frac{L51}{F}$
M	$\frac{M36}{C}$	$\frac{M39}{C}$	$\frac{M40}{C}$	$\frac{M42}{C}$	$\frac{M43}{C}$	$\frac{M45}{C}$	$\frac{M46}{C}$	$\frac{M48}{C}$	$\frac{M51}{C}$
Sr	$\frac{S39}{C}$	$\frac{S40}{C}$	$\frac{S42}{C}$	$\frac{S43}{C}$	$\frac{S45}{C}$	$\frac{S46}{C}$	$\frac{S48}{C}$	$\frac{S48}{F}$	$\frac{S50}{F}$
WIDTH OF 6 ² SET-UP	40.0 MM	44.0 MM	44.5 MM	47.0 MM	48.0 MM	50.0 MM	51.0 MM	54.0 MM	59.0 MM

FIVE-PHASE ANTERIORS



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SEPTEMBER 1951

About Our CONTRIBUTORS

EDWIN ROSENSTIEL, L.D.S. (Victoria University of Manchester, England, 1946) is a full-time lecturer in the Conservative Department of Kings College Hospital Dental School at the University of London. Doctor Rosenstiel's special interests are crown and bridge construction and he has published a number of papers on this subject in English dental journals. Abstracts of Doctor Rosenstiel's articles have also appeared in American Yearbooks of Dentistry, 1947 and 1949. For his first publication in DIGEST Doctor Rosenstiel presents in the current issue, ELECTROFORMING DENTAL DIES.

HAROLD C. KILPATRICK, D.D.S. (University of Pennsylvania, 1932) is a general practitioner who has done extensive research in dental alloys. In the current issue Doctor Kilpatrick describes in detail a procedure for perfecting the finish of amalgam restorations. His article is ELIMINATION OF FACTORS AFFECTING THE FINISH OF AMALGAM RESTORATIONS.

MATTHEW LOZIER, B.S., D.D.S. (New York University, College of Dentistry, 1923) specializes in oral surgery and has published extensively on radiography, diagnosis, exodontia, and related subjects. In the current issue Doctor Lozier presents POSTOPERATIVE MANAGEMENT OF BONE CAVITIES IN EXODONTIA AND ORAL SURGERY.

HILLEL FELDMAN, D.D.S. (New York University, College of Dentistry, 1909) has been a frequent contributor to DIGEST for almost twenty years, publishing articles on a variety of subjects drawn from his comprehensive experience as Director of Dental Service, Lincoln Hospital, Department of Hospitals, New York City.

HARRY L. PAGE, who attended Hotchkiss and Yale, follows his analysis of the problem of articulation which appeared in the March 1951 issue with a discussion in the current issue of one component of the involuntary kinematic jaw pattern, THE BENNET MOVEMENT.

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EDWARD J. RYAN, B.S., D.D.S., Editor**WANDA T. PICKARD, B.A., Assistant Editor****708 Church Street, Evanston, Illinois***Copyright, 1951, by Dental Digest, Inc. See page 388 for subscription data, etc.**The magazine is mailed on the fifteenth of the month of issue.*

ELECTROFORMING

Dental Dies

EDWIN ROSENSTIEL, L.D.S., London

DIGEST

Successful electroforming depends on (a) satisfactory electric equipment with non-corroding metal parts giving positive contacts, (b) a practical method of current control which is not subject to guesswork about the relative size of individual impressions, and (c) a cheap yet efficient backing material and trimming routine.

The method presented in this article has been in use for many years in a commercial laboratory and has stood the test of time. It has also been used during the last two years in one of the London dental schools as the exclusive means of producing inlay dies, and large groups of stu-

dents have successfully operated the plant shown in Figures 1 and 2 after a short demonstration course.

The production of electroformed dies for inlays, crowns, and bridges from copper tube impressions, as presented in this article, is the most accurate and reliable method of making indirect restorations. The method is free from difficulties and there is nothing experimental about it.

Apparatus

Although it is possible to make inlay dies by copperplating with simple and primitive equipment, such an ap-

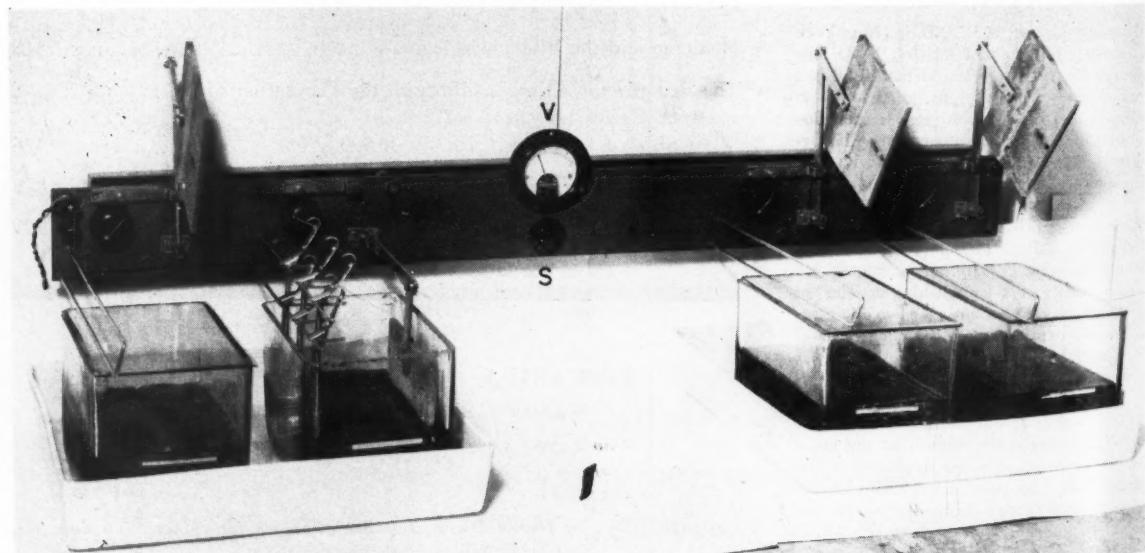
proach is inadvisable. The chemicals used in this process are corrosive and one may find that electric connections, impression holders, or other metal parts are soon attacked. The apparatus illustrated in Figures 1 and 2 avoids these drawbacks in two ways:

1. The distance between the electric panel and the tanks containing the liquid is large and the two units are not connected, i.e., the dishes and tanks slide under the bus-bars and the panel is fixed against a wall. Cleaning is greatly facilitated by this arrangement.

2. All exposed metal parts (except the copper anodes) are made of polished stainless steel and are completely corrosion-proof. Because of the low voltage used this is particularly important.

Adjusting the Current—An efficient copper plating unit for making dental dies needs some means of ad-

1. Plating apparatus. (V) Voltmeter. (S) Switch for meter.



2. Another view of part of Figure 1.
(A) Anode. (C) Cathode. (R) Rheostat controls.

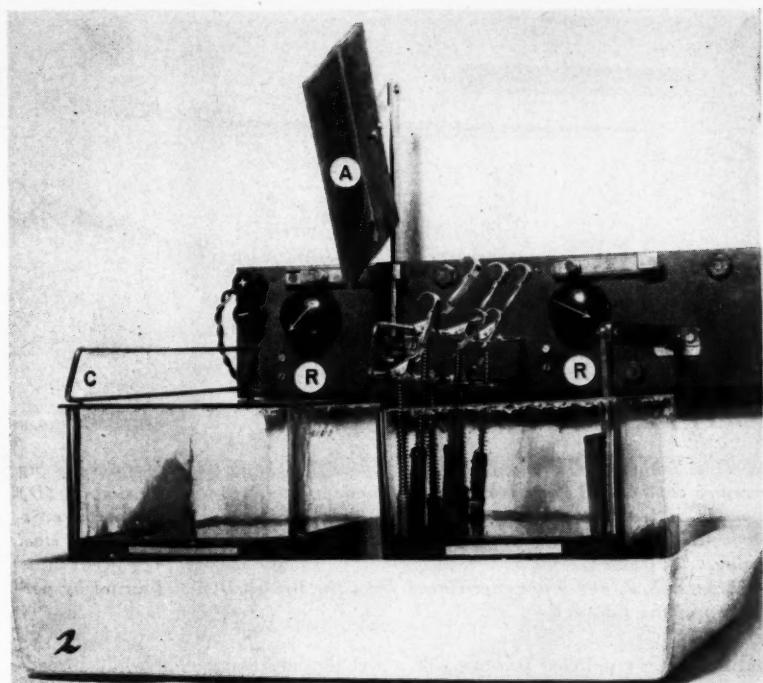
justing the current according to the load (this is a feature common to all plating outfits and a variable rheostat is used for the purpose), and a means of predetermining the current required for any particular load.

Predetermining the Current—The simplest way of predetermining the current would be by means of a rheostat with several graded positions which correspond to the number of impressions under treatment.

Measuring the Current—By a more satisfactory method the current is measured by incorporating a milliamperemeter in the circuit and adjusting the current to a predetermined figure according to the load in hand. The difficulty inherent in this procedure lies in how to arrive at the figure in question. It is not the number of impressions but the total impression surface area which must be known (10-15 amperes per square inch is recommended by Tylman,¹) and even the number of the copper band used, Novak,² is only a rough guide to area as no allowance is made for the depth of the impression.

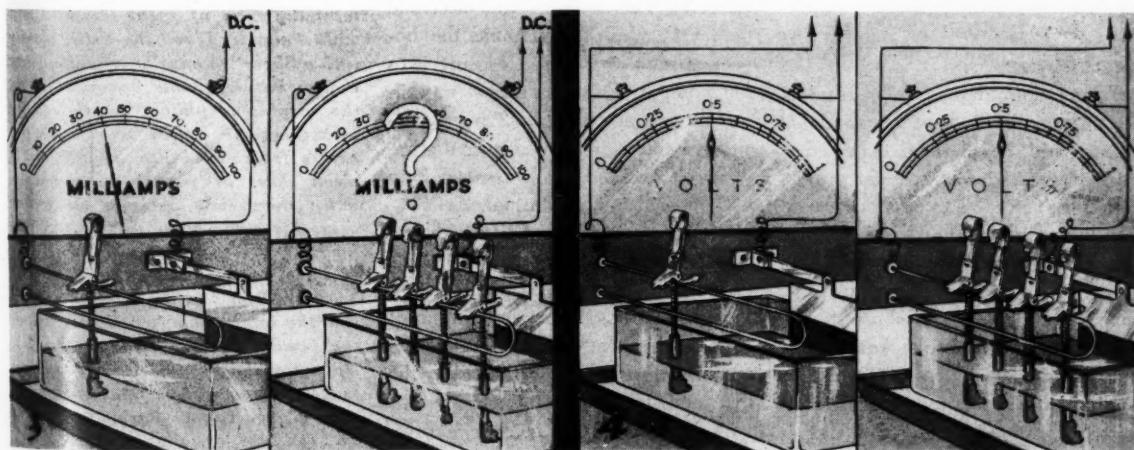
¹Tylman, S. D.: Theory and Practice of Crown and Bridge Prosthesis, ed. 2, London, Kimpton, 1947, p. 451.

²Novak, A.: Difficulties with Copper Electroformed Dies, J.A.D.A. 39:554 (Nov.) 1949.



Constant Potential Drop—The diagrams (Figs. 3 and 4) illustrate a principle well known in industrial plating practice in that the current is regulated (but is not measured directly at all) in such a way that a constant potential drop is produced between anode and cathode, which is determined once and for all for a particular apparatus. Five hundred

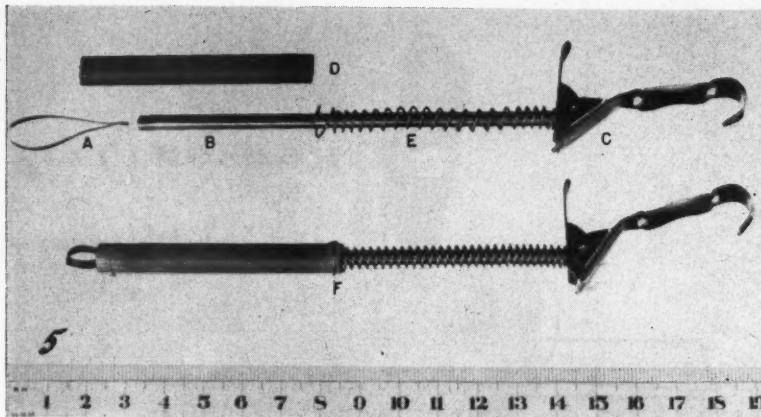
millivolts have been found the most suitable figure in a tank with $3\frac{1}{2}$ to 4 inches distance between anode and cathode for the usual type of acid copper bath at average room temperature ($50^{\circ}\text{-}86^{\circ}$ Fahrenheit). One of the usual transformer metal-rectifier combinations, but with a terminal voltage of just under one volt (without load), is most convenient to use,



3. Old method of current adjustment.
 Milliamperes are varied according to estimated size and number of impressions. Low amperage is recommended by most authorities for initial plating

period. This is an extra complication.
4. New method of current adjustment.
 The same reading ($\frac{1}{2}$ volt) is constantly maintained, irrespective of size and number of impressions. Current

densities are thus automatically adjusted during the initial period to optimum values. There is no guess-work with regard to the surface area of the particular impressions.



5. This holder (F), made from an x-ray clip (C), provides positive spring pressure contact. All the metal parts are made of stainless steel. Insulation (D) is made of laminac. (A bakelite type of plastic. Ebonite would also be satisfactory). (A) Stainless steel loop. (B) Stainless steel rod. (E) Stainless steel spring.

(Figures 1, 2, and 5 are reproduced from the British Dental Journal by permission of the Editor.)

and the meter employed is a one-volt, full-scale, deflection voltmeter. Any competent electrical engineer would be able to assist readers in constructing such a unit.

An efficient impression holder, also made entirely of stainless steel except for the insulating tube (Fig. 5), completes the equipment. The spring pressure transmitted to the loop of stainless steel ribbon ($2\frac{1}{2} \times .15$ -millimeter orthodontic band) eliminates the difficulties which are experienced when sticky wax is used to secure copper bands to metal platforms.

Technique

When mounting an impression in the impression holder remember that spent liquid, having been deprived of Cu-ions, is of lower specific gravity and therefore tends to move upwards. This movement should be facilitated in order to obtain higher working efficiency. For this reason turn the copper band with the shortest side uppermost. Paint with Aquadag³ in water. This material is supplied as a medium thick, creamy suspension of colloidal graphite in water and is ready for use. It is applied to the impression by means of a firm but soft sable brush. At first it may not readily

wet the impression, but while spreading it over the surface, excess is removed from the brush on to a clean sheet of paper and the graphite becomes more and more tacky. It should generally be left to dry for one hour or at least three-quarters of an hour even in warm climates (Fig. 6).

Figures 7-21 illustrate the subsequent steps in the making of an inlay die.

Miscellaneous

Composition cone without copper tube: 1. The loop of the electrode holder is made to surround the impression and it is wise to secure it to the composition with sticky wax in one or two places (Fig. 21b).

2. Graphite is painted over the impression and the stainless steel loop and allowed to dry as usual.

3. Iron is applied and turned into copper immediately.

4. Do not box at this stage but commence plating. After some minutes copper will have deposited inside the actual impression area, and now the loop and surplus area are stopped off with baseplate wax, i.e., the impression is boxed.

Pinlay Impressions—Graphite is an excellent separating medium and provided the pins have no undercuts, they are merely painted with graphite and will readily withdraw from the

model later. Undercuts can be waxed and the wax graphited in the usual way.

Dowels—The pin of a dowel crown impression tends (1) to collect more than its fair share of deposit, and (2) to divert the current away from the root face part of the impression. To counteract this the following routine is recommended:

1. Plate as usual but for three hours only.

2. Slip a short piece of rubber tubing over the dowel to stop further deposition in this area.

3. Having redirected the current into the deeper parts of the impression, continue plating overnight in the usual way (Fig. 21a).

Backing—Stone is the backing material used in routine technique. Stone-backed dies are cheap, quickly trimmed, clean, and easy to handle.

Not every stone seems compatible with electroplated copper, however, and some preliminary experiments are advisable when a new material is used for the first time.

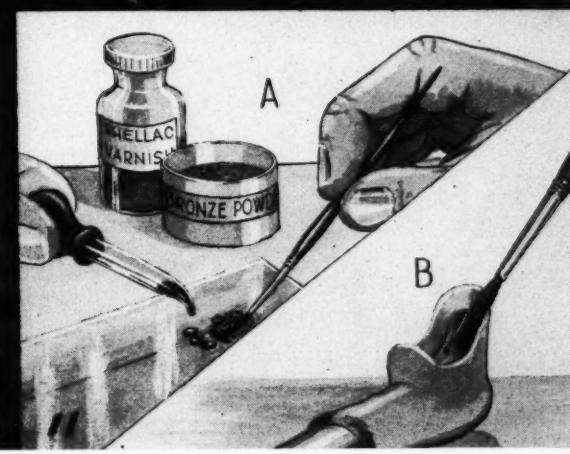
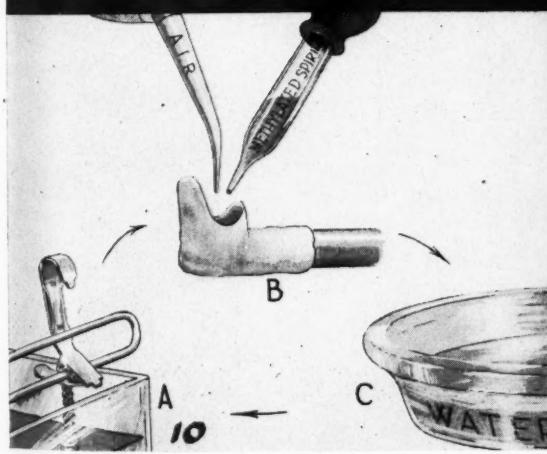
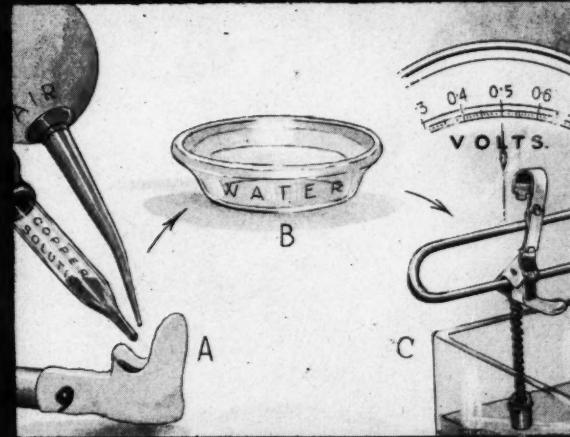
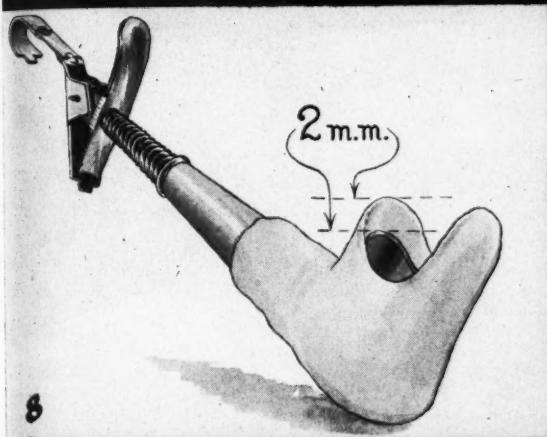
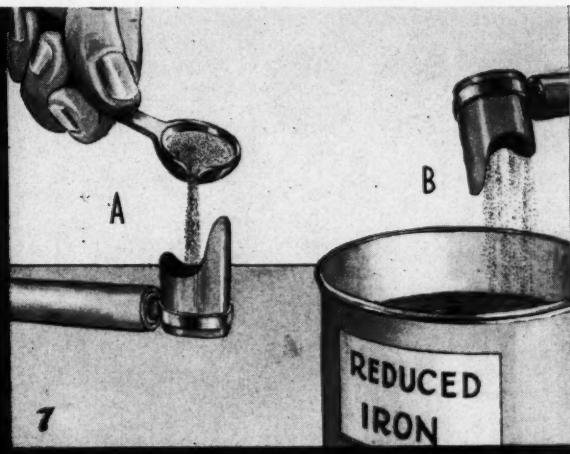
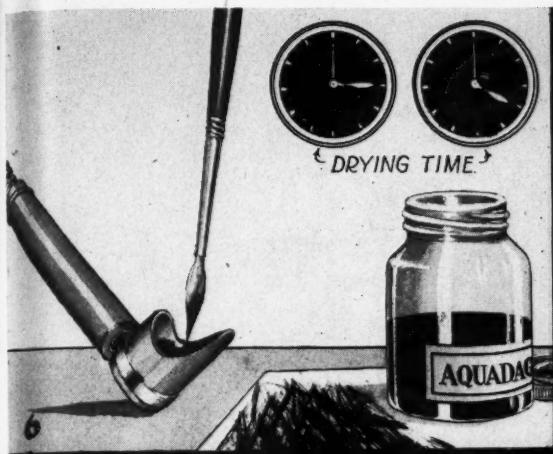
Kryptex model cement is preferred in (1) dies of small cross-section (where stone might break), (2) in most bicuspids and anteriors, and (3) for porcelain jacket crown construction as stone cannot be satisfactorily

6. The impression is mounted as shown, shortest side up. This facilitates diffusion of spent liquid. Paint with Aquadag. Flood the entire cavity with a liberal amount of graphite using a firm but soft sable brush. Mop up the surplus graphite from the cavity with the same brush. To remove the excess from the brush, wipe it on a clean sheet of paper. Do not take more than sixty seconds altogether over this step. Allow to dry for one hour.

7. Pour iron powder (reduced iron) into the impression (a). Gently tip all the powder back into the bottle (b). Do not shake the impression and just sufficient iron will be retained to produce a good copper flush.

8. Boxing. Wrap a strip of pink baseplate wax around the impression for insulation. Seal back and sides and cut the open end parallel with the open end of the copper tube, but leave about 2 millimeters of excess all around. Have the wax close against

³Aquadag is the registered trade-mark of Acheson Colloid Corporation, Port Huron, Michigan, U.S.A.



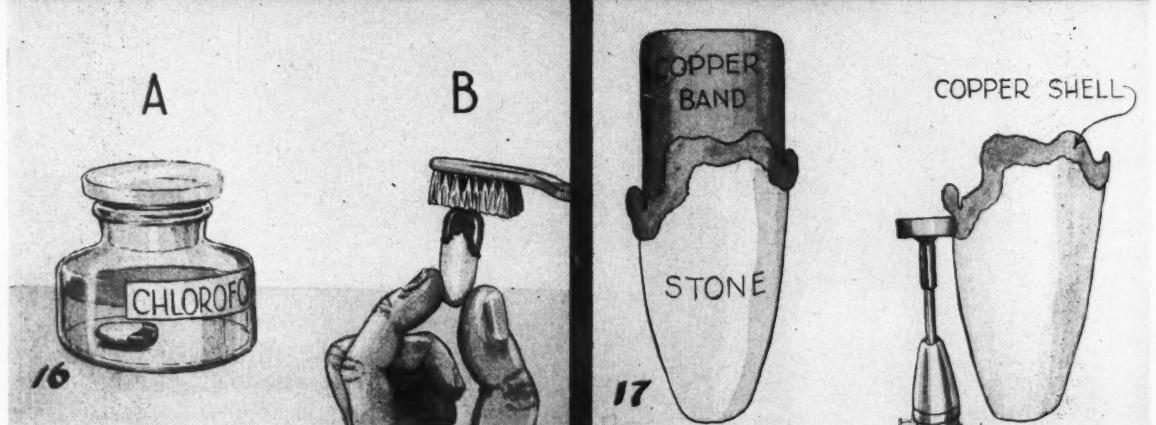
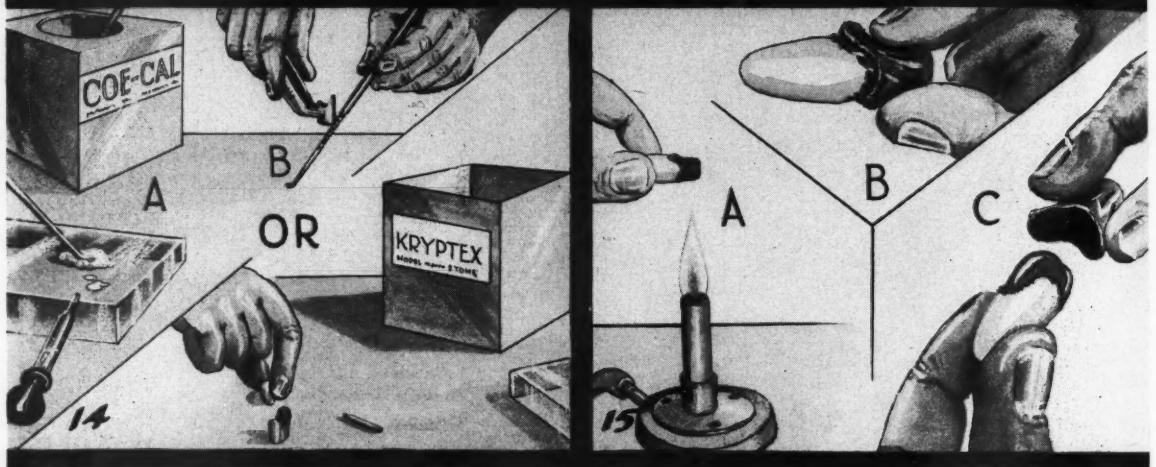
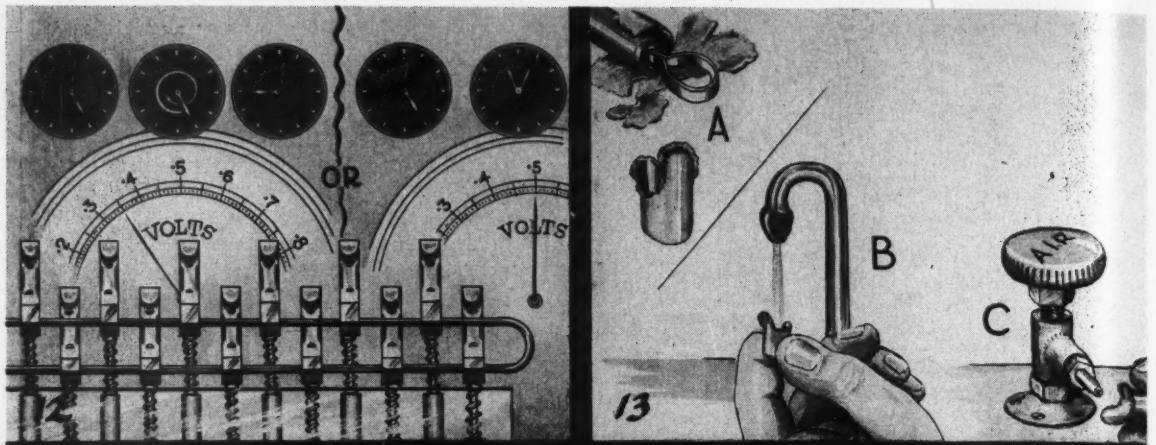
the tube to prevent deposit from creeping over the outside.

9. (A) Carefully fill the impression with copper solution. This turns the iron powder into a copper flush. Keep the liquid moving by blowing air from a chip syringe. (B) Wash impression in water. (C) Immerse in plating bath with current switched on. Adjust meter to read 500 millivolts and hold at this point for about five minutes.

10. (A) Remove and check for complete copper film. If small black spots persist, fill the impression with methylated spirit. (B) Expel all air, then dip the impression in water to remove the spirit and put back into the plating bath. (C) Allow fifteen minutes before rechecking and repeat if necessary.

11. Sometimes a black patch persists and requires spotting. (A) With a

medium-sized photographic spotting brush mix a minute amount of conducting paint from shellac varnish (shellac flakes dissolved in methylated spirit) and finest copper powder (so-called copper-bronze, not dyed). (B) With this retouch the dry impression. Use just enough varnish to close the black spot, then dust with a bit of dry copper powder and leave for three minutes.



12. Repeat the preceding steps with the next impression, one at a time (Numbers 10 and 11 where necessary), and collect all the impressions in a bowl with clean water as soon as a complete copper film has been produced. Immerse all the impressions in plating tank and set meter to 500 millivolts. Leave for six to eight hours. Or set meter to 320-340 millivolts and leave overnight. This makes for more

even deposits with less overgrowth.

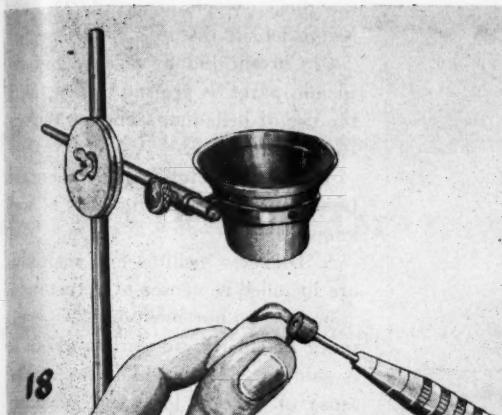
13. (A) Remove impressions and strip off the holder. (B) Rinse under tap. (C) Dry with compressed air.

14. To pack with stone or Kryptex cement: Mix stone (Coecal) on a glass slab (A), and vibrate into impression with Le Cron carver handle (B). Build remainder up into a stump. Allow to set for one hour.

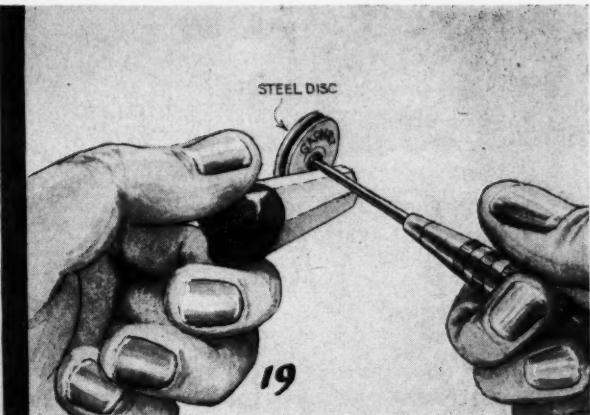
Or mix Kryptex model cement to a

stiff putty and pack, little by little, with an old straight bur, the head of which has been removed. Pack rapidly and build up the stump by hand. If the cement sticks to the fingers or begins to bend over, it was mixed too thin. (Prevent sticking by dipping fingers in cement powder or into methylated spirit.) Allow to set for twenty minutes.

15. To remove the copper tube:



18



19

Make sure that this is not trapped by excess of electroplate on the outside. Grind excess if necessary. Heat tube over Bunsen burner (A), then squash gently between thumb and first finger (B). This will loosen the tube at the periphery. Remove it from the impression (C).

16. Leave the die in chloroform to remove all traces of composition (A). Brush it clean with an ordinary toothbrush (B).

17. Trim the die with a heatless stone or coarse diamond wheel. Begin by removing excess of electroplate, complete the general shape of the backing of the die. Aim for straight geometric design to obtain positive registration in the plaster cast later.

18. Trim away excess near margins with a smaller, preferably new, stone and control progress under a watchmaker's lens.

19. Finish the die with a seven-eighth-inch garnet disc, backed by a metal (steel) disc in order to produce flat planes.

vibrated with a serrated instrument when condensing the porcelain.

Low fusing alloy is not recommended. Although easily and quickly made, dies backed with Melotte's or similar metal (1) take much time to trim, (2) continually soil the fingers with traces of lead coming away in handling them, and (3) are clumsy to use because of their excessive weight.

Formula

The following is the formula for an extremely satisfactory and simple electrolyte:

Copper sulphate (crystals)	
200 grams	
Sulphuric acid (concentrate)	
50 grams	
Water	
1000 cubic centimeters	

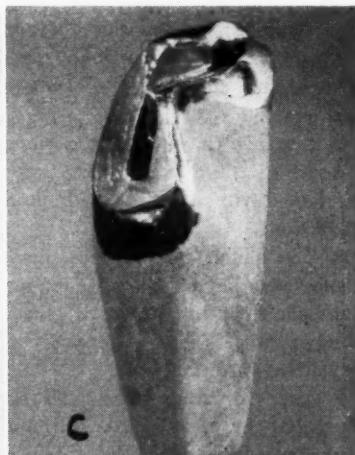
20. Photographs of finished dies.



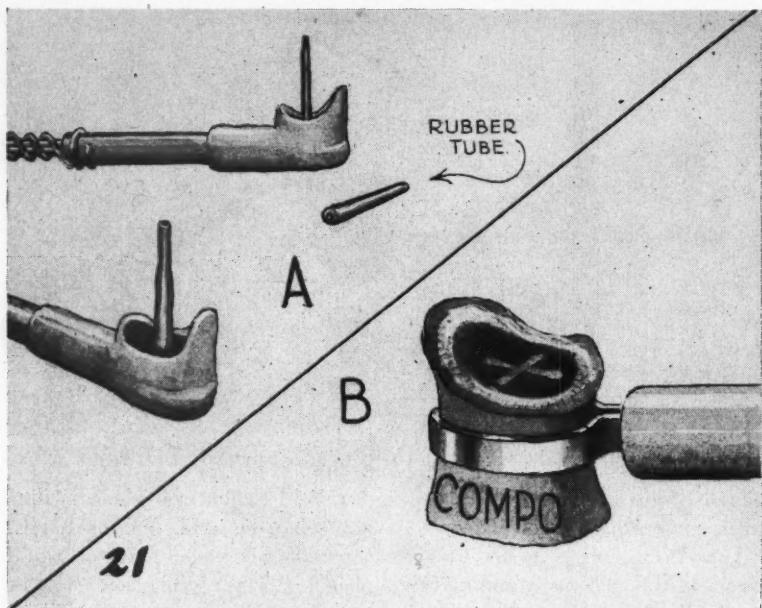
A



B



C



21. (A) The pin of a dowel crown impression would collect electroplate at the expense of the rest of the impression. A piece of (cycle valve) rubber tubing, slipped over the pin after three hours' plating will prevent this. Plating is continued as for an ordinary impression. (B) Impression of an occlusal cavity mounted in an impression holder. This impression is taken with a composition cone without a copper tube.

Conclusion

Making copper-plated dies from colloid impressions is still in an ex-

^aDwight, O. D.: Copper plating of Reversible Hydrocolloid Impressions, *J. Dent. Res.* **28**:456 (Oct.) 1949.

^bRosenstiel, E.: Experimental Copper Forming of Hydrocolloid Impressions, *Dental Record* **70**:105 (April) 1950.

^cRosenstiel, E.: Improvement in Electroforming Dental Dies, *Brit. Dent. J.* **88**:269 (May 19) 1950.

perimental stage^{6, 7, 8} but the routine plating of copper band composition impressions can be done by any progressive practitioner or technician.

*King's College Hospital Dental School
University of London.*

Severe Dryness of the Mouth

Symptoms

1. A 59-year-old woman complains of dryness of the mouth and pharynx of seventeen months' duration, so pronounced that she finds it difficult to swallow food.

2. She had infected teeth, blood pressure of 260/140, and urine with specific gravity of 1010, with fluid restriction.

3. The tongue and mucous membranes were so dry that the tongue depressor stuck to them as if glued. Otherwise the results of physical examination were normal.

4. After extraction of the teeth she felt better but her mouth did not change.

5. Her blood pressure dropped to 140/110, and the specific gravity of the urine would occasionally be as high as 1016. Her nonprotein nitrogen is 32 and sedimentation rate 25 millimeters.

Discussion

1. The Jacksons¹ in discussing Mikulicz's disease, mention dryness of the mouth and the conjunctiva which may be due to the replacement of secretory tissue by an infiltration of lymphatic cells.

2. In xerostomia the role of dehydration is mentioned following

¹Jackson, Chevalier, and Jackson, C. L.: Diseases of the Nose, Throat, and Ear, Philadelphia, W. B. Saunders Company, 1945, p. 145.

diarrheas (typhoid, cholera) and severe febrile diseases.

3. Chronic kidney disease and epidemic parotitis are implicated, as is the use of belladonna and its derivatives, and opium.

4. Dryness following roentgen treatment of facial structures is well known.

5. Diabetes mellitus and insipidus are included as causes of xerostomia.

6. One author mentions its occurrence in elderly women in whom it is said to follow mental shock. The sense of taste is lost, and speaking and swallowing are difficult. Because of dehydration, the tongue resembles crocodile skin.²

Sjögren's Syndrome—Some of the symptoms described may belong to what is more recently described as Sjögren's syndrome, a complex characterized by dryness of the conjunctiva, mouth, nose, pharynx, trachea, and bronchi. Gastric and vaginal secretion may be minimal. Depending on the location and possibly owing to the action of some secretoinhibitor mechanism, there are symptoms divisible into ophthalmic, oropharyngeal, and a so-called classic type, in which the chief complaints are swelling of the salivary glands, fever, and gastrointestinal complaints.

Treatment—Cooperman³ suggests that the cause may be too little acetylcholine or too much cholinesterase at the end organ. He suggests the use of (1) diethylstilbestrol and methyltestosterone, because of the possible relation of the complaints to the menopause, and (2) pilocarpine because of its cholinergic character. Glycerin mouth washes are said to be helpful; nasal obstruction should be treated to minimize mouth breathing, and lost teeth replaced by well-fitting dentures to help avoid respiratory dryness.

Adapted from Queries and Minor Notes, *Journal of the American Medical Association*, **146**:878-879 (June 30) 1951.

²The Merck Manual, ed. 8, Rahway, N.J., Merck & Co., Inc., 1950, pp. 309-310.

³Cooperman, H. O.: Sjögren Syndrome, A Secreto-Inhibitor Syndrome Ann. West. Med. & Surg. **4**:344-347 (July) 1950.

Elimination of Factors Affecting

the FINISH of AMALGAM RESTORATIONS

HAROLD C. KILPATRICK, D.D.S., Yonkers, N. Y.

DIGEST

The perfect finished amalgam restoration is a product of a sequence of controlled operations starting with the manufacture of the alloy and the purification of the mercury.

The mechanical aids to be used to overcome variables¹ and the step-by-step procedure to be followed in obtaining a perfectly finished amalgam restoration are outlined.

Characteristics of Completed Amalgam Restorations

The following are some of the undesirable features of completed amalgam restorations often encountered:

1. Over-Expansion
2. Contraction
3. Tarnish
4. Discoloration of the tooth
5. Fracture of the restoration

Over-Expansion

The term over-expansion is used as some flow is to be desired in order to lock the restorations more tightly in the tooth.

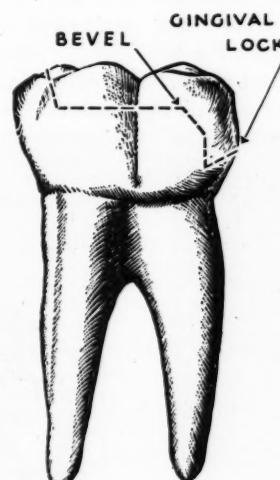
Causes of Over-Expansion—1. Most over-expansion is caused by undertrituration. One solution to this fault is the correct use of a mechanical amalgamator with a built-in timer, thus standardizing a correct mixing time.

2. Another condition causing too much expansion is the practice of leaving excessive amounts of mercury in the finished restoration. This may be remedied by using a correctly proportioned mix.

Correct Ratio for Mix: The ratio for most mixes is approximately eight to five. A study by Phillips shows that the general loss in strength and increase in flow, caused by using an improper ratio, are definite although not excessive.² It is desirable that the mercury be expressed until the ratio in the finished restoration is about five to five.³

Aid for Obtaining Proper Proportions: This may be accomplished by using firm mechanical pressure on each addition to the restoration and expressing mercury from each piece before it is placed into the cavity preparation. The practice of expressing all the mercury at the start should only be done when the restoration is of a moderate size.

3. Some over-expansion, including



1. The axial bevel and gingival lock which greatly strengthen the restoration.

blistering and bubbling, may be caused by contaminants. Contamination occurs when the amalgam is muddled in the hand. In addition to perspiration and epithelial cells, residue from oily skin lotions coats many of the alloy particles. This may be controlled in the following ways:

(1) Never touch the amalgam with bare hands. The amalgam should be placed on a clean squeeze cloth with pliers and handled with clean carriers.

(2) All plugging instruments must be free of old amalgam and cement residue.

(3) Serrated condenser points should not be used as the indentations are most difficult to keep clean.

Preparation May Contain Contaminants—Uncontrolled expansion may be caused by contaminants contained in the preparation itself:

(1) All remains of debris should be carefully removed by flushing the preparation with hot water. The tooth should then be isolated with a rubber dam or cotton rolls and the organic matter oxidized with a fresh solution of hydrogen peroxide followed by a suitable sterilizing agent.

(2) Phenol will definitely leave an oil film. When oils are used they should be removed with a suitable solvent such as chloroform. Phenol may be neutralized with alcohol. It is advised to cover zinc oxide bases with a varnish or an oxyphosphate cement.

Protecting From Moisture—During packing the amalgam must be pro-

¹Kilpatrick, H. C.: Elimination of Variables in Amalgam Manipulation, *DENTAL DIGEST*, **49**:76-78 (Feb.) 1943.

²Phillips, R. W., and Boyd, D. A.: Importance of the Mercury-Alloy Ratio to the Amalgam Filling, *J.A.D.A.*, **34**:458 (April) 1947.

³Ward, M.: *American Textbook of Operative Dentistry*, Philadelphia, Lippincott, 1940, p. 488.



2. The type of carving often seen today. The deep lines act as wedging areas.

tected from moisture. If a dam cannot be used, cotton rolls must be carefully placed to absorb all saliva. A dental napkin should be arranged to act as a shield to keep the expired air from the restoration.

Contraction

The defect of contraction is not observed too often in restorations at present. The most common causes are (1) over-trituration, and (2) excessive heat in polishing which withdraws mercury from the surface of the restoration causing it to contract at the margins and leave a ditch. Do not overmix and keep all polishing stones, wheels, and burs cool with a stream of water.

Tarnish

Much of the tarnish which occurs on amalgam restorations is probably due to the formation of sulphides by reaction with hydrogen sulphide and oxygen.⁴

Prevention— Much of the tarnish may be overcome by polishing correctly. This places a layer of highly condensed and burnished particles on the outer surface of the restoration, making it impervious to outside contamination to a great extent. The polish tends to prevent local galvanic action and tends to prevent the adherence of food deposits and stains.

Patient Care—Amalgam restorations should be examined at regular intervals and those that show too

much tarnish should be re-polished. Patients should also be carefully instructed in home care. Amalgam, if expected to retain its color and lustre, must be brushed regularly by the patient.⁵

Discoloration of the Tooth

1. Occasionally, the metallic sulphides penetrate the dentinal tubules, imparting a dark hue to the enamel. This is usually caused by faulty margins which allow a leakage of saliva and acids between the restoration and the cavity walls. Defective margins may be overcome by not putting too deep a bevel on the preparation. At the start of the packing only dry pieces should be used in order to prevent the spheroiding that occurs with a starting mix that is too wet.

2. Corrosion of amalgam may occur from moisture contamination of the tooth structure itself.⁶ Care should be taken to prevent this by covering all wet dentine with varnish or cement or both.

Fracture of Restorations

1. Most fractures of amalgam are caused by improper cavity preparation. A true box type form should be employed without excessive beveling. In approximal preparations the axial occlusal angle should be beveled to give added strength to the interproximal extension (Fig. 1).

2. Marginal fractures may occur when a hard steel mechanical condenser point is used directly against an enamel margin. This point should only be used on the amalgam itself.

⁴Skinner, E. W.: The Science of Dental Material, ed. 2, Revised. Philadelphia, W. B. Saunders Company, 1940, p. 340.

⁵Link, W. A.: Anatomic Amalgam Restorations, J.A.D.A. **31**:1216 (Sept.) 1944.

⁶Schoonover, I. C. and Souder, W.: Corrosion of Dental Alloys, J.A.D.A. **28**:1278 (Aug.) 1944.

When it is necessary to condense directly against an enamel margin, a rubber point, as suggested by Miller, should be employed. If this is not available a piece of cotton or four thicknesses of dental napkin may be placed under the steel point.

3. Some amalgam restorations fracture due to too great sustained occlusal pressure. It would be advisable to replace these with inlays of hard gold. Other fractures occur when deep cuts are made as the restoration is being carved or polished. These cuts act as cleavage areas and often are the starting points of future breaks (Fig. 2).

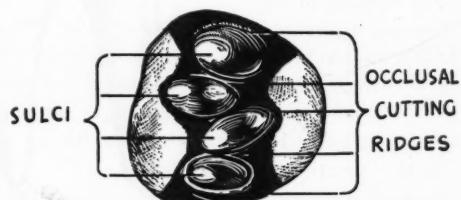
Finishing Amalgam Restorations

After the restoration material has been packed to a definite excess, the matrix is carefully removed by withdrawing it from buccal to lingual and the restoration is trimmed and adjusted for occlusion. At this point the bulk of the carving may be done by carrying out the following procedure:

1. A round bur, usually a number 7, 8, or 9, depending on the size of the restoration, is inserted in the angle or handpiece.

2. Revolving the engine at its *slowest* speed and applying the *lightest* pressure, the restoration is grooved and carved entirely by the bur. This procedure carves the restoration with rounded grooves rather than sharp angled cuts (Fig. 3).

3. A continuous blast of air should be used to keep the field of vision clear. There are several attachments on the market which fit directly to the handpieces and make an excellent aid in the cavity preparation. Figure 4 shows carved, unpolished restora-



3. This is the type of carving which is easy and quick to carry out and which leaves sufficient cutting edges for chewing yet does not weaken the restoration.



4. Restorations carved with a bur directly after insertion.

tions immediately after their insertion. Figure 5 shows the same restorations after polishing.

4. A notation should be made on the chart of the size of the bur used when carving so that when the patient returns for the final finishing, the same size bur is again placed in the handpiece and again using the slowest speed but with slightly more pressure, the grooves and sulci are polished and accentuated.

Method of Polishing—By using a cutting bur and not a burnishing or finishing bur, a high polish is imparted to the restoration without generating much frictional heat. A mild abrasive paper disc is used to polish the interproximal margins and a rubber sulci disc is buffed over the entire restoration under a stream of water from the water syringe or one

of the handpiece attachments. It is not necessary to polish the contact point as a well-packed restoration against a steel matrix will have sufficient finish.

Final Polishing—The scratches left by the bur can be removed by using a wet paste of zinc oxide and alcohol on a stiff brush, taking care not to create an excessive amount of heat. This final polishing does not take more than two or three minutes. Figures 6, 7, and 8 show restorations placed in mouths over five years.

The majority of amalgam restorations are not given a complete finish. The reason for this is that the procedure takes too much time. If the procedure described is followed, the small amount of time required will pay dividends in a higher quality of restorative work.

*Yonkers Professional Building
27-41 Ludlow Street.*



5. The same restorations as in Figure 4 after the final finishing.



6, 7, and 8. These restorations were placed over five years ago. Note the high lustre still present.



Eight Points for the Improvement of the FULL LOWER DENTURE

WILFRED D. CLARK, D.D.S., Hamilton, Ontario

Point 1—The Labial Wall

The labial wall is considered as extending in width from roughly the area of the distal of the second bicuspid on the right side to the same point on the left.

In depth, that is, from teeth to border of denture, the wall should be considerably deeper than is commonly seen. A deeper wall will often overcome the difficulty of a denture which will not stay in place. If its greater depth causes soreness in the labial frenum area, trim only enough to give relief—no more. Reroll the trimmed area and give it a high polish.

The buccal wall, which extends from a point opposite the distal of the second bicuspid distally to the buccal outline of the retromolar triangle, is trimmed short to overcome lift of the denture on opening the mouth.

Point 2—The Sublingual Extension

The lateral extent of this area corresponds to the extent of the labial area, that is, from a point opposite the distal of the second bicuspid on the right side to the same point on the left.

Where it ends, the mylohyoid begins. The mylohyoid ends in the retro-mylohyoid area, a small area at the extreme distal of the lingual wall which has as its most important feature a rather shallow undercut.

Determining the Length of the Wall—The mylohyoid and retro-mylohyoid areas have borders $\frac{1}{8}$ inch in thickness but the border of

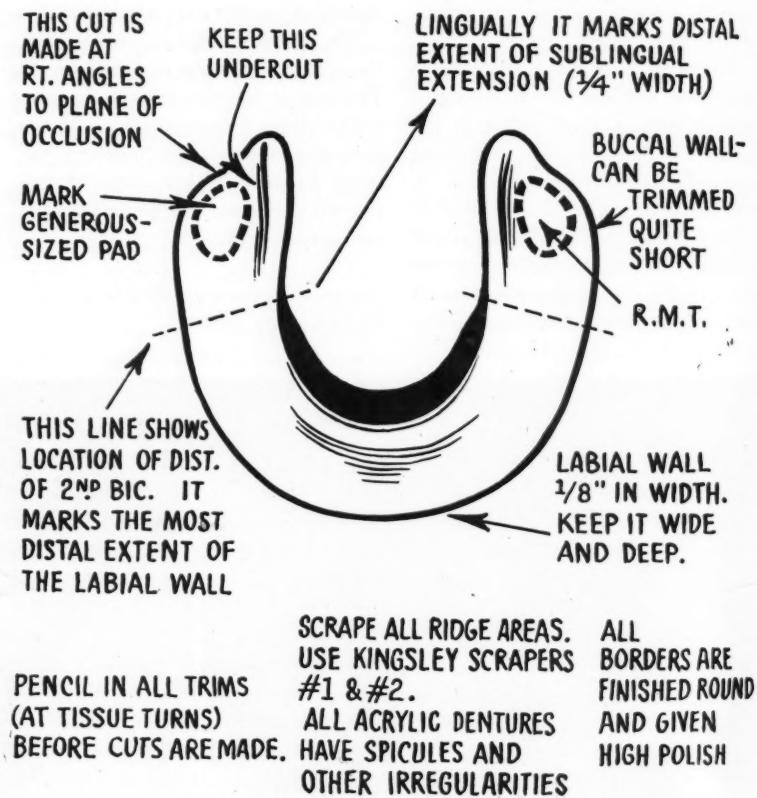
the sublingual extension is made $\frac{1}{4}$ inch thick. The length of the wall is determined by the position of the muscles of attachment with the tongue at rest. This is distinguished from (A) a protruded tongue, (B) a tongue dropped low on the floor of the mouth.

Should there be any doubt as to the length of the sublingual wall, it is better that it be slightly shorter rather than longer.

Tongue Space Provided—The tongue side of the lingual wall in the area of the sublingual extension should be hollowed out to add to tongue space. The concavity should not extend low enough to endanger the $\frac{1}{4}$ inch roll of the border.

It can be noted at this point that hollowing of the entire lingual flange back to the second molar area is desirable and very acceptable to the patient. There will be no "tongue trap" from this cause.

Value of Sublingual Extension—In conclusion, it should be stressed



that the sublingual extension will add more to the stability of the lower denture than any other single feature in lower denture outline. It is worth all the study it takes to perfect its use. The operator who perfects the technique will not discard it (Fig. 1).

Point 3—The Retromolar Triangle Areas

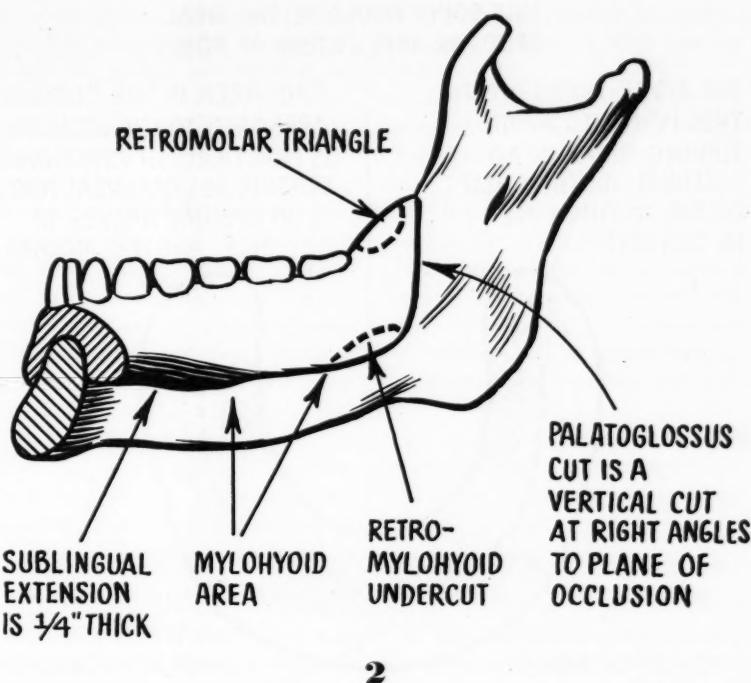
The lengths of the most distal parts of the denture are determined by the position of the retromolar triangles. Before trimming in this area, the retromolar triangles should be outlined in pencil on the tissue side of the denture. If in doubt as to its exact extent, draw a generous sized triangle. Do not trim to this line at any point. On the buccal side, trim so that the triangle is just avoided.

The Extreme Distal Border Must be Rolled—Across the distal border, trim to roughly $1\frac{1}{2}$ millimeters beyond the pencil mark at the distal of the retromolar triangle. Note that this extreme distal border must eventually be rolled and polished just as thoroughly as the rest of the denture border.

Indicator for Position of the Vertical Outline—The line established across the distal outline of the retromolar triangle is the indicator for the position of the vertical outline from the crest of the ridge to the retromylohyoid undercut. This line is a vertical one: it is at right angles to the plane of occlusion.

The Undercut Must be Preserved—The lingual wall should be left long enough in the retromylohyoid area so that the undercut is preserved. It is rarely a deep undercut. The tissue in this area must not be compressed in taking the impression (Fig. 2).

Mylohyoid Area Adds Nothing to Retention—The position of the undercut determines the depth of the denture wall at this most distal point. Anterior to the undercut is the mylohyoid area. It adds nothing to the retention of the denture just as the buccal wall adds nothing. It is possible to trim the mylohyoid wall to the crest of the ridge without changing the denture retention.



2

Reason for a Shorter Wall—The reason for frequently finishing up with a shorter wall in the mylohyoid area (as distinguished from the retro-mylohyoid or undercut area) is to ensure that the patient's tongue may reach the buccal pouch on the opposite side of the mouth to remove food. He must be able to do this without denture movement.

Point 4—Comfort Controls Efficiency

Many authorities believe that cuspless posteriors are greatly superior to teeth which have any cusps, no matter how shallow, and it also seems likely that the teeth should be made of acrylic material in an effort to conserve ridges.

Point 5—Position All Teeth Directly Over the Crest of the Ridge

The middle of the ridge is not necessarily the crest of the ridge, but the crest acts as the divide which separates influences unfavorable to denture retention from those favorable to it. All forces directed toward the lingual side of the ridge tend to seat the denture while all other forces act unfavorably.

Forces Tending to Crossbite—In the average mouth the ridges are not directly opposite each other except in the area of the second bicuspids where they usually cross. The upper ridge is wider anteriorly and narrower posteriorly. Thus a crossbite is often inevitable when all the teeth are set over the crest of the ridge both upper and lower. Flat cusped posteriors make this easy of accomplishment and thus guarantee favorable vertical forces in occlusion.

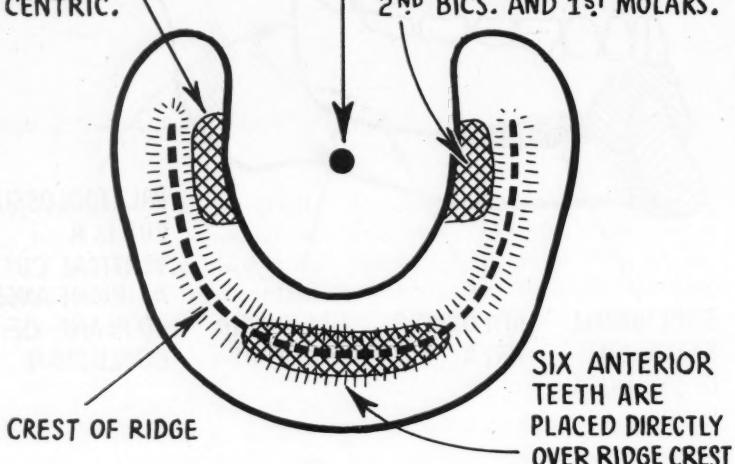
Location of Direct Forces—The width of the lower molars and second bicuspids is important. The buccal halves of these teeth should be narrowed so that all direct force is located lingually to the ridge crests. These buccal halves should be made subocclusal, that is, slightly out of contact in functional centric.

Location for Stabilizing both Dentures—The second bicuspid and first molars are the only teeth which are left in contact in functional centric and then only the lingual half of them. All other teeth are kept 1 millimeter out of contact. Thus the most favorable location for stabilizing both dentures is the only area in contact at the finish of the masticating stroke.

THIS POINT WOULD BE THE IDEAL SPOT FOR APPLICATION OF FORCE.

THE RIDGE TURNS UP AT THIS POINT. TO AVOID TIPPING THERE IS NO OCCLUSAL TOOTH CONTACT DISTAL TO THIS LINE IN CENTRIC.

THIS AREA IS THE CLOSEST APPROACH TO THE IDEAL THAT IS PRACTICAL. IN FUNCTIONAL CENTRIC ALL OCCLUSAL FORCE IS ON LINGUAL HALVES OF 2ND BICS. AND 1ST MOLARS.



3

The Balancing Factor—The upper second molar is omitted from the upper denture (except for the patient who is going to count the teeth—in that case it should be kept well out of occlusion). The lower second molar is the balancing factor. It is tipped anteriorly and lingually to obtain balance against the distal border of the upper first molar. Do not employ a compensating curve. Keep all functional occlusion anterior to the lower molar slope: that part of the lower ridge which turns up, includes the retromolar triangle, and ends in the ramus (Fig. 3).

The lower anterior teeth should be kept directly over the anterior ridge. In natural teeth 95 per cent of all lower incisors are straight: directly over the ridge or 5 degrees one way or the other.

Incisal Edges Must be Over the Ridge—Not merely the base of the teeth, but the incisal edges, must be over the ridge. The incisal edge is where the leverage is applied. It is vital to good retention and good incisal function. The patient must bear with it as far as esthetics is

concerned. Explain it to him. The lip contour will be good.

Esthetics Should be Considered—The upper anteriors are the only teeth which may vary in their relation to the ridge; esthetics should be allowed to control their positions but here again, the closer to the ridge, the more stability.

Point 6—No Anterior Vertical Overbite

Anterior Interference is Fatal—To reproduce a deep vertical overbite of anteriors in dentures amounts to giving the patient the handicap of a malocclusion as viewed from the standpoint of prosthetics. If full upper and lower dentures were without the 12 anteriors many difficulties could be eliminated. Keeping this in mind will help ensure providing anterior clearance.

A Common Error—The necessity for avoiding completely any vertical overbite in the anterior 12 teeth cannot be overemphasized and yet of all the sins committed in setting up teeth, this one is by far the most common. An authority to whom hun-

dreds of prosthetic cases are referred annually expresses the opinion that 90 per cent of the failures are due to a missed centric and/or anterior interference.

Point 7—Articulator Grind-in

The tissue side of the completed denture should be coated with one of the correction pastes, (1) inserted with moderate pressure, (2) allowed to cool or chilled with cold water, and (3) removed and examined for any areas requiring relief. This must be done to each of the two dentures individually. They should be inserted separately so that the occlusion, as yet underground, is not a factor in producing the areas to be eased. This procedure not only helps to avoid sore areas later but permits each denture to seat properly and fully while bite registrations are being taken for the final grind-in.

Use of Articulator—The grind-in should be done on an articulator. The only exception to this would be in the use of a tracing device with central bearing pin. This is an efficient device, provided the patient is cooperative and a nongagger. However, the articulator can be used universally.

Mouth Grinding Ineffective—A mouth grind cannot give results comparable to those obtained with an articulator. The dentures will shift on the ridges and because the operator cannot see the whole occlusal surface at one time, it becomes almost impossible to achieve a balanced, smooth-riding, final occlusion by mouth grinding.

Procedure

1. Fill undercutts in both dentures with plasticine and pour mounting casts.

2. Take centric and protrusive records. Use two-thirds of a sheet of pink baseplate wax for each record. Soften thoroughly on both sides, then roll and soften in flame again.

3. With upper in mouth, place wax on lower denture, insert, take centric registration, being extremely careful to have no penetration of wax.

4. Chill and remove.
5. Repeat for protrusive.
6. Seal dentures on mounting casts to preclude any movements of the denture on the case during grinding.
7. Mount on articulator and when set adjust condyle angles to protrusive wax record.

Four Phases of the Grind-in

(A) *Correction in Centric*—1. A three-inch square of two-sided carbon paper is placed on the occlusal of the lower and the dentures are chopped together in centric. 2. Grind off high spots until both sides contact simultaneously. Grind the lower teeth. 3. Finish up the centric grind so that the occlusion is entirely on the lingual halves of the lower second bicuspids and first molars. No other teeth make contact in centric.

(B) *Correction for Right Lateral*—1. Insert carbon paper and carry upper member of articulator over to a right lateral position about 3 millimeters away from centric and then slide into centric. 2. Grind high spots until dentures slide smoothly and the pressure is greater on the left or balancing side.

(C) *Correction for Left Lateral*—Repeat grind-in for left lateral until pressure is heavier on right for balance.

(D) *Correction for Pressure*—1. Carry upper member back and move forward and back. 2. Grind anterior

and lower second molars until dentures slide smoothly and pressure is greater on second molars than on anteriors.

Finally teeth are milled in with paste (Kerr's abrasive paste for porcelain posteriors and Justi milling paste for acrylic posteriors).

Creating New Pits—If flat plane posteriors have been used, grinding will have removed much of the anatomic markings on the lower posteriors. A CleveDent plug finishing bur No. 231 is right for creating new pits on the occlusal of plastic teeth.

Polish All Occlusal Areas—It is more than worth while to check the dentures with gel again after the grinding; this time both dentures go in the mouth together and the patient is allowed to occlude. Relieve denture on the tissue side where it appears necessary. Thorough checkings with gel and a smooth grind-in will eliminate almost all the usual postinsertion difficulties.

Point 8—Rebase on the Slightest Provocation

If the lower denture, at any time, from the day of insertion and on does not behave as well as it should, fall back on rebasing: 1. Use Kerr's impression wax. 2. Cover the tissue side of the denture with molten wax and *chill thoroughly*. 3. With upper denture in mouth, insert chilled lower, have patient occlude lightly. 4. In about fifteen minutes the wax will have absorbed mouth heat suf-

ficient to give an excellent impression within the denture. 5. Chill and remove.

Before deciding on the necessity for rebasing, the lower denture may be checked for the following difficulties:

1. Denture does not stay down—lengthen the labial wall.
2. Denture comes up on opening the mouth—shorten the buccal wall.
3. Can't lick lips, or sore under the tongue—shorten sublingual extension *up*. Don't narrow the wall. Reroll and polish.
4. Can't put tongue in buccal space to remove food—shorten mylohyoid wall on the opposite side. Reroll and polish.
5. Sore throat—shorten denture at palatoglossus border.

6. Denture rises on opening mouth—if this persists after buccal wall has been sufficiently shortened, look to the most distal part of the denture, directly behind a retromolar triangle, light mouth well and observation will show if the pull is occurring at this point. Shorten, reroll, and polish well.

If difficulties have failed to be eliminated by the measures described, rebasing usually will relieve them, and often without the necessity of a further grind-in.

296 Ottawa Street, North.

— Adapted from *Journal of the Canadian Dental Association* 17:67-73 (Feb.) 1951.

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POSTOPERATIVE MANAGEMENT

of Bone Cavities in Exodontia and Oral Surgery

MATTHEW LOZIER, B.S., D.D.S., New York

DIGEST

Since the introduction of the anti-infective agents, the sulfonamides and the antibiotics, postoperative treatment of most sockets and bone cavities not acutely infected, has been greatly changed.

This article describes the steps taken in the postoperative pro-

cedure in several thousand cases successfully treated by the author. With this technique (1) except the removal of sutures, no further interference with the wound was necessary, (2) the postoperative course was almost always uneventful and recovery rapid, and (3) the incidence of so-called dry socket was entirely avoided.

Postoperative Problem

After operations for cystectomy, apicectomy, and removal of teeth, especially lower molars (in either normal or abnormal position), the immediate problem confronting the surgeon is treatment of the created socket or bone cavity.

Former Methods of Treatment

Before the advent of chemotherapeutic and antibiotic agents the accepted postoperative management of such cavities, particularly when they were of any appreciable dimension, consisted of filling them loosely with (1) medicated, (2) plain, (3) lubricated, or (4) dry gauze dressing of appropriate width and length.

The dressings were then either

slightly pulled out, shortened, and refreshed, or were completely removed and replaced every second or third day, until the cavity was closed or nearly closed with organized tissue.

Disadvantages of Method—Among the obvious disadvantages of the procedure were the following: (1) disagreeable taste and odor, (2) frequent tenderness, (3) occasional recurrence of bleeding or oozing induced by the process of shortening or replacing the dressing, (4) protracted healing process, and (5) the loss of time involved in numerous postoperative visits.

Advantages—Despite the disadvantages, the management formerly used was, with rare exceptions, considered essential because of the following factors: (1) In the majority of cases the

breaking down of the organized blood clot was prevented, (2) newly formed tissue to obliterate the created space from the bottom and sides of the cavity rather than from the top was encouraged, (3) the lips of the wound were prevented from coadapting prematurely, and (4) the possibility of a severe secondary hemorrhage was minimized.

The Use of Anti-Infective Agents

In view of the results obtained from the employment of the newly developed anti-infective agents, the sulfonamides and the antibiotics, postoperative management of most nonacutely infected sockets and bone cavities has gradually altered. It was soon definitely determined that by supplanting the gauze dressings with some of the anti-infective agents virtually all of the difficulties incurred with the former technique could be completely eliminated.

Clinical experience, supplemented with roentgenographic surveys, has clearly demonstrated the superiority of the new method of procedure. In nearly every case, regardless of the size of the bone cavity encountered, healing was realized by first intention. In almost no instance has there been evidence of (1) excessive postoperative swelling, (2) immoderate discomfort, (3) slow healing, (4) secondary hemorrhage, or (5) any other undesirable symptoms.

Procedure

The following procedure was employed in the postoperative management of grossly uninjected sockets and bone cavities in surgery performed on several thousand unselected ambulatory patients of both sexes including (1) all ages, (2) varied psychic attitudes, and (3) a variety of physical conditions including menses and pregnancy:

1. The operative area is well isolated to prevent contamination with saliva.

2. After the removal of the tooth, amputation of the root apex or enucleation of a cyst, careful removal of present chronic diseased condition is done.

3. Adequate debridement and leveling of all accessible sharp, uneven, and fulcrumized bone surfaces is then performed.

4. The bone cavity is wiped out with a small sponge moistened in hot sterile water.

5. As a final step the cavity is aspirated of blood and carefully inspected with the aid of a powerful small intraoral light supplemented by magnification.

Roentgenograms Useful—In the majority of our cases an immediate postoperative roentgenogram of the region has been found to be extremely useful.

Medication Applied—When needed, sutures are inserted although they are not always immediately tied. With a suitable instrument, such as a large spoon curette, an ample portion of sterile, finely powdered sulfanilamide is deposited in the cavity. An amount of previously prepared sterile paste consisting of sulfathiazole (60 per cent), glycerine (30 per cent) and guiacol (10 per cent) is slightly moistened with tincture of iodine and deposited over the sulfanilamide powder, filling the cavity or socket to the top.

If they were not previously tied, the sutures are now tied. A suitable amount of sterile oxydized cotton (oxycel) is inserted between the lips of the wound.

Concluding Steps

1. A small sponge, moistened with water to prevent adhering to the hemostatic agent, is placed over the wound and the patient is asked to compress on the sponge. This pressure is to be maintained for the next ten or fifteen minutes while the patient, supporting against his face a small, loosely filled ice bag, remains seated.

Before the patient is dismissed the moistened sponge is removed, the wound is examined for possible oozing and a dry sponge is placed over it.

Postoperative Treatment

The patient is requested to maintain compression until he reaches home. He is also asked to abstain from rinsing, eating extremely hot or hard food, and biting on the affected side of the mouth at least until the following day.

The patient should also be warned not to disturb the oxydized cotton which may sometimes appear to him as a discolored blood clot and cause apprehension.

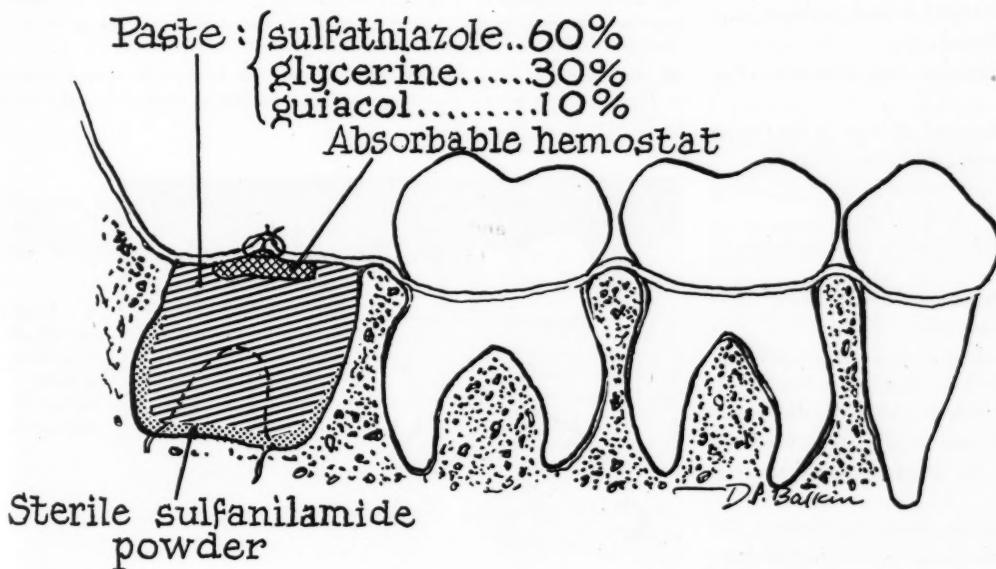
As a cold application not only reduces postoperative edema but has a definite analgesic effect, the patient is asked to apply a small ice bag to the affected area for ten to fifteen minutes every hour for the next day or two.

Conclusion

It has been demonstrated that with this procedure (1) no further care or interference with the wound is ever necessary (except the removal of sutures), and (2) the postoperative course is usually uneventful and recovery rapid.

It is interesting to note that the sometimes highly annoying incidence of the so-called dry socket can be almost completely avoided, provided the postoperative management of sockets and bone cavities described is closely followed.

369 East 149th Street.



The Removal of the Hypercementosed

MANDIBULAR BICUSPID

M. Hillel Feldman, D.D.S., New York

DIGEST

Mandibular bicuspids which present extreme hypercementosis with curvature such as shown in the roentgenogram A, are frequently difficult surgical problems. To attempt to remove such a bicuspид with primary application of forceps is ill advised. Unless the bone encasing the tooth may be expected to offer little resistance to delivery force, on account of the disintegrating action of an infective process, fracture following initial forceps application may be expected.

Surgical Procedure

The proper sequence of surgical steps advised for such an operation are the following:

- (1) Adequate flap reflection (Fig. D).
- (2) Removal of bone in the region of the curve in the root (Fig. E).
- (3) Application of lever for elevation of the tooth (Fig. F).
- (4) Suturing flap back to points of detachment (Fig. G).

The drawings C to G show these steps in sequence.

When these four steps are properly executed there should be little post-surgical distress. At most, there may be slight swelling due to some hemorrhage. No injured bone has been left.

Method for Removing Bone—The author has found correct engine-driv-

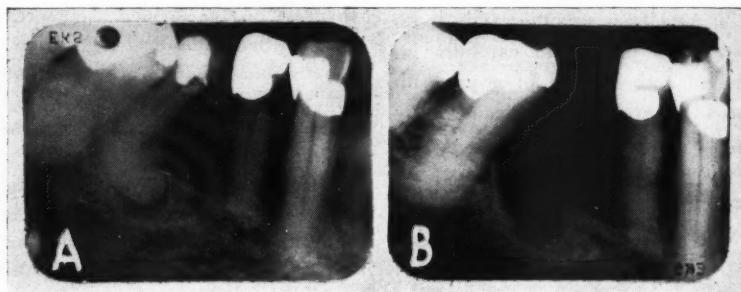
en drill procedure most suitable for the removal of the bone indicated at the curve in Figure E. This bone being all that impedes the delivery of the tooth, there should be no difficul-

ty with the prompt elevation of the tooth en masse.

Preparation for Rapid Healing—

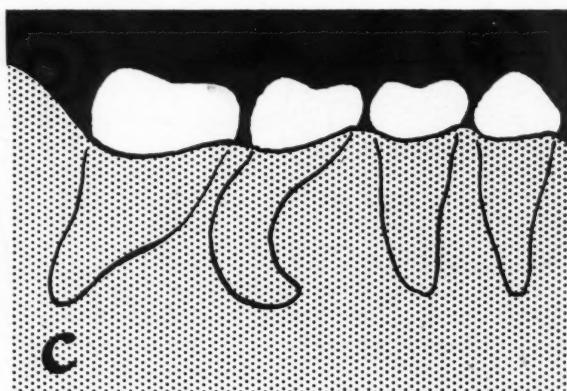
Attention to sharp margins and rounding off the alveolar wall leaves the area in satisfactory condition for early uneventful healing.

730 Fifth Avenue.

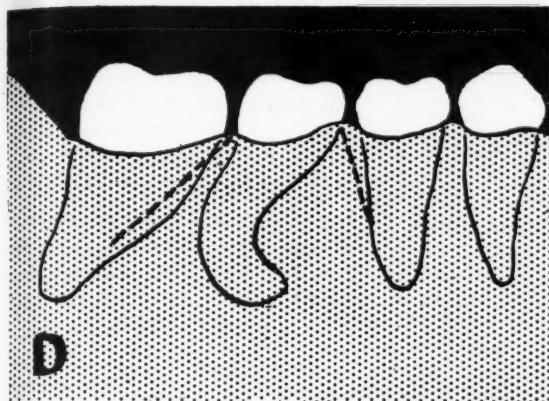


A. Roentgenogram of a severely hypercementosed mandibular bicuspид presenting an additional complication element of curvature near the apex.

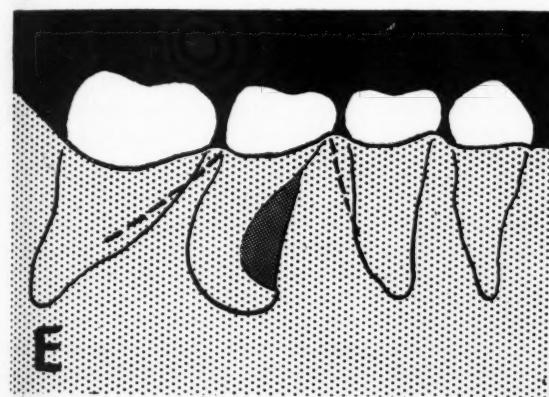
B. Post-surgical view of area from which the hypercementosed bicuspид seen in Figure A has been removed following procedures portrayed diagrammatically in Figures C to G.



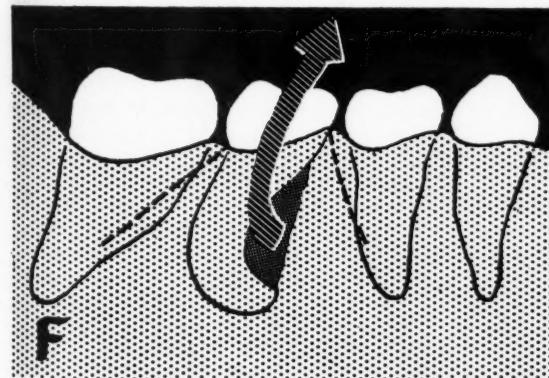
C. Diagrammatic sketch of hypercementosed mandibular bicuspид shown in x-ray in Figure A.



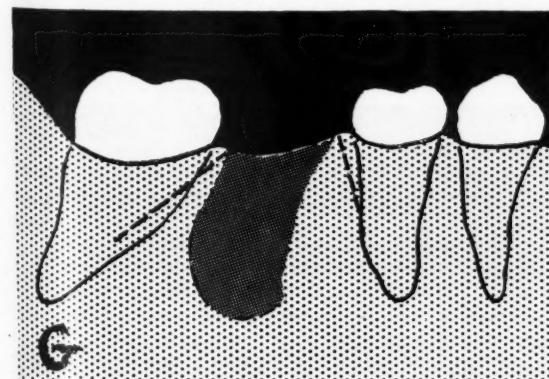
D. Lines of incision for reflection of the mucoperiosteum must be adequate to afford a radius of surgical manipulations which will not trespass upon soft tissue.



E. Removal of the alveolar tissue at the bend of the root will clear the obstruction to elevation of the tooth. Engine-driven drill technique is recommended for this purpose.



F. Arrow indicates direction of lever play. The toe of the lever is adjusted against the root surface and with delicate wrist play upward elevation is quickly effected.



G. Rough bone margins are trimmed down and the mucoperiosteum reattached with sutures. Saline irrigation should precede suturing.

Smashed Faces

IT IS EXPECTED that in the year 1951, 50,000 persons will be killed in automobile accidents and 1,500,000 will be injured. A large number of the badly injured will have fractures of the facial bones.

Aids in Diagnosis—In many cases much can be learned by examining the person before swellings make diagnosis difficult. A sagging eye or double vision, or an off-side bite often show that there is a fracture, even when not obvious in roentgenograms. More roentgenograms must then be taken at different angles and studied with great care.

Other Aids—Palpating the orbital rim, the forehead, the zygoma, the facial bones, the hard palate, and the mandible is also helpful. If the floor of the orbit is smashed it must be properly reconstructed or the patient will keep seeing double. If the palate is crushed the little pieces must be replaced and perhaps sewed together. An oral surgeon or a dentist can often help by alining the teeth and making an upper plate which will hold the dental ridges and the palate bones in place.

Skull Fracture—Patients with complicated fractures of the upper jaw should be considered to have a skull fracture until the possibility is disproved.

Modern Therapy

1. Today, pins can be used to hold in place the various fragments of splintered facial bones. Formerly, physicians were inclined to fasten the mandible to the maxilla and wire everything together. The application of externally placed pins (1) permits immediate movement at the temporomandibular joint, and (2) enables the patient to open his mouth.

2. Prompt reduction of fractures of the maxilla gives the best results. In some cases a special operation has to be performed which will enable the physician to reach up through the antrum and reconstruct the floor of the orbit.

Adapted from *GP* 4:32-33 (July) 1951.

The BENNET Movement

Harry L. Page, Valparaiso, Indiana

DIGEST

(1) To resurface a malposed natural dentition, or (2) refurbish an edentulous mouth with satisfactory artificial teeth, not even one component jaw motion may be slighted with safety. Occlusal surfaces must be built to accept the complete and involuntary kinematic jaw pattern, the grand synergy. This article discusses one kinematic component, the Bennet movement.

Early Recognition

The Bennet movement has been recognized since Ferrein¹ first looked upon it as a manifestation of a clinical error in 1744. Balkwill² is said to have discussed it in 1866. Its name, however, stems from a work by Doctor N. G. Bennet,³ published in 1908, in which he described some almost forgotten experiments made by himself and his brother.

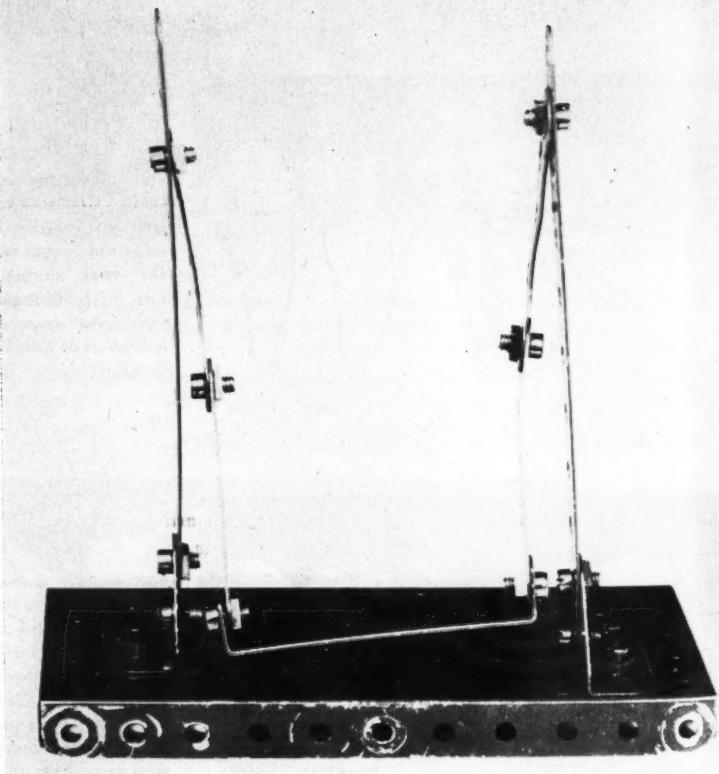
Side Shift of the Mandible—These experiments commented on a definite bodily side shift of the mandible in the course of lateral jaw movements. This concept of the Bennet as an integral part of lateral movement has since continued to be universally accepted. However, little attention has been concentrated upon it and only

two modern authorities, McCollum and Granger, seem to have granted it any special significance.

Importance Emphasized—McCollum⁴ has stated that "The shape of the Bennet movement has as much as, and probably more, influence upon

the articulating surfaces of the teeth than any other component of jaw motions." Granger⁵ has endorsed and emphasized this: "Since it is the power movement, it is the most important of the mandibular synergy."

Because it is part of the jaw synergy there is no question that whenever a Bennet movement exists it is



1. A mechano jaw in position to simulate a wide-open mandible with a pronounced shift to the left of the median line.

¹Bergstrom, Gunnar: Reproduction of Dental Articulation—A Kinematic Investigation, *Acta Odontologica Scandinavica* 9:14 (January) 1950.
²ibid.
³ibid.

⁴McCollum, Beverly B.: Fundamentals Involved in Prescribing Restorative Dental Remedies, *Dental Items of Interest* (Reprint June, 1939—February, 1940) p. 45.

⁵Granger, Ernest R.: Paper read at Washington State Dental Meeting, 1950.

important and may not be neglected safely. Claim to preeminent importance, however, might reasonably be challenged by the major opening and closing movement.

Old Theory Challenged—The two-hundred-year-old theory that the Bennet movement is a component of lateral motion alone has also been in doubt recently. There is evidence that it is a natural satellite of vertical rather than lateral motion.

Anatomic Discrepancies

1. It has been known for decades that temporomandibular joints in the same head are rarely, if ever, placed parallel and in uniformity with each other. 2. The condyles are not alike in shape or size. 3. The ramus and body of the mandible on one side of the jaw differ in length compared to their mates on the other side.

Such an asymmetrical jaw cannot open and close on an arc lying in the sagittal plane alone. The divergence of centers and radii will force a collateral transverse movement to accompany the opening and closing. This explains and gives significance to the Bennet movement.

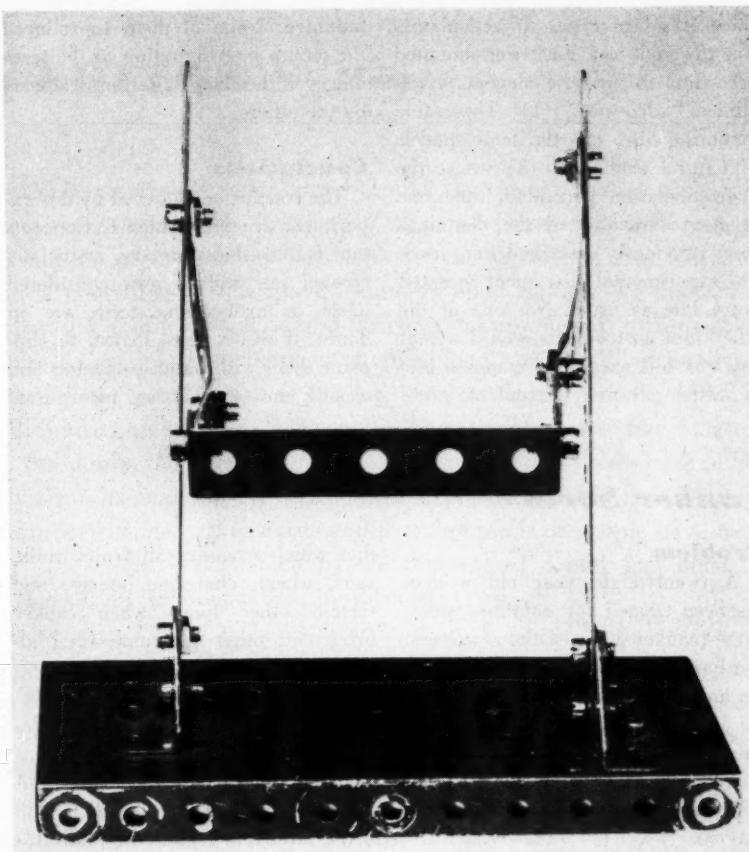
Mechanism Demonstrating a Bennet Movement

Doctor Clinton Vroman of Vancouver, British Columbia, was the first to design a mechanism to demonstrate a Bennet movement:

1. Several pieces of a discarded mechano set were used. On a two-and one-half by five-inch mechano platform two flat uprights were mounted about four inches apart. They were not mounted in line transversely, one being bolted slightly forward of the other.

2. From five short pieces a crude jaw was fabricated with simulated rami, mandibles, and an anterior junction. The ends of the rami were then hinged near the top of the two uprights but with one joint half an inch higher than the other.

Opening and Closing of the Mandible Simulated—When this mechano jaw is moved up and down to simulate opening and closing of the mandible the effect is dramatic. In the



2. A mechano jaw in position to simulate a closed jaw relation.

accompanying photographs Figure 1 shows that Doctor Vroman's wide-open mechano mandible has twisted well to the left of the median line. When brought to an assumed closure, (Fig. 2) it has returned to an approximately normal position.

Movement Reproduced in an Articulator—The significance of this new concept of the Bennet movement is important. It now appears feasible to reproduce an accurate Bennet as a component to the opening and closing movement in an articulator. The lateral shift will take place automatically.

Instrument in Operation

An articulator reproducing an accurate Bennet movement has been built and has been in operation since February, 1950 with the following results:

1. It has consistently demonstrated its ability to inject the Bennet movement while operating in conjunction

with the asymmetrical axial center or hinge-axes principle.

2. It has proved its accuracy by accepting instantly and perfectly wax bites of widely varying thicknesses and bite depths on any given dentulous case.

3. It has responded equally well to an edentulous test.

Edentulous Test Applied—1. A wax rim bite with a vertical opening that was almost half an inch excessive was used to mount the instrument. 2. The bite-rims were then returned to the mouth and the excess vertical was corrected by cutting away the rim heights. 3. When the vertical had been reduced to normal in the mouth the apposition of the rims was so notched as to be unmistakable. 4. The bite-rims were returned to the instrument. 5. It accepted them instantly and in precisely the same apposition that the mouth created.

Final Test—A comparison of results produced by one esoteric and

three standard types of articulators was the final test. Each was mounted according to the best concepts of its clinical advocates. (1) The same mounting bite, (2) the same models of natural teeth, and (3) where the instrumentation permitted, the same hinge-axes of one of the dentulous cases previously described were used. The experimental instrument accepted every bite as usual. Not one of the other four instruments would accept any wax bite except the common bite by which all five instruments were

mounted. None of them reproduced the mouth interdigititation of the teeth nor even the interdigititation produced by the others.

Conclusions

The conclusions induced by this experiment are inevitable: 1. Concepts that feature the voluntary, artificially created jaw radials now considered basic in articulating teeth are in doubt. It would seem logical to supplement them with natural opening and closing movements that incorporate

the patient's Bennet and his involuntary laterals (not artificial radials) as component rather than basic movements.

2. If an instrument is to have value in kinematic articulation it should be able to prove that all its movements start from accurate static relationships.

3. As it moves through the vital opening and closing action it should prove itself able to incorporate the Bennet movement precisely.

104 Garfield Avenue.

Canker Sores

Problem

1. A twenty-eight year old woman has been treated for aphthous stomatitis (canker sore) without success. She has had these sores most of her life and is almost never without them for longer than a week at a time. They are worse just before menses and usually occur in crops over the buccal mucosa, tongue, and over the pharynx.

2. The lesions consist of discrete, yellow, slightly elevated areas surrounded by a reddish border.

3. Treatment has been (1) biweekly vaccinations with smallpox vaccine, (2) weekly injections of bismuth and oxophenarsine hydrochloride (mapharsen®), and (3) 5 per cent sodium perborate mouth washes. There may be some improvement in the number and painfulness of the lesions but they still occur with exasperating regularity.

Discussion

Allergic Study—Aphthous stomatitis always requires an allergic study. Most allergists agree that food allergy is the usual cause. Walnuts, spices, and fruits are to be suspected; other foods commonly responsible for allergy must be considered.

Fruit-free Diet—Because of the difficulty of determining clinical food allergy with skin tests, Rowe¹ has long prescribed his fruit-free elimination

diet which excludes all fruits, milk, eggs, wheat, chocolate, spices, and certain other foods when canker sores and other gastrointestinal allergies occur.

Fallibilities of the Skin Test—According to Rowe, the unfortunate delay in recognition of food allergy as a common cause of canker sores and other gastrointestinal allergy is due to the failure to realize the fallibility of the skin test in the determination of such allergy and failure to use trial diets accurately for the study of such allergy. The published menus and recipes for bakery products for this diet must be used. No trace of the suspected food can be taken, and satisfactory weight must be maintained with the foods in the diet.

Method for Determining Allergic Response—1. If constant canker sores are present, relief in two to three weeks, lasting for one to two weeks, indicates exclusion of allergenic causative foods. 2. If attacks occur every two to six weeks, relief must continue while the elimination diet is used for at least twice as long as previous periods of intervening relief. 3. When relief is assured, the individual foods can be added, each being eaten daily for five to seven days before another is added. 4. Foods that cause the lesions to recur must be excluded, usually for months or even for longer periods, before tolerance for them returns.

Allergy to Drugs—Canker sores also occur from allergy to various drugs

and occasionally to allergens in dentifrices and ingredients of mouth washes. Bacterial allergy may be a rare cause, as suggested by crops of such lesions following injections of certain vaccines and relief of such lesions when foci of infection are removed. The possibility of an electrolytic reaction between gold and amalgam restorations has been suggested in the literature. Canker sores occur in debilitated patients, but in them the major cause may be food allergy.

Types of Allergic Reactions—In almost all patients with aphthous stomatitis, other allergic reactions, (1) gastric distention, (2) substernal soreness and fulness, (3) nausea, (4) vomiting, (5) abdominal soreness, pain or distress, (6) diarrhea, (7) mucous colitis, (8) constipation or other gastrointestinal symptoms, usually due to food allergy, exist.

All other causes of such gastrointestinal symptoms must be thoroughly ruled out by indicated laboratory investigations and roentgen ray studies and physical examination.

Other Manifestations of Allergy—Usually the dietary history, or the drug history reveals evidence of possible food or drug allergy. In rare cases, canker sores with or without allergic stomatitis, glossitis or pharyngitis, may be the only manifestation of clinical allergy.

Adapted from Queries and Minor Notes, *Journal of the American Medical Association* 146:75-76 (May 5) 1951.

¹Rowe, Albert Holmes: Elimination Diets and the Patient's Allergies, ed. 2, Philadelphia, Lee & Febiger, 1944.

The EDITOR'S Page

FOLLOWING THE publication of the special material on focal infection in the June issue of the *Journal of the American Dental Association* and the subsequent newspaper articles on the subject, many dentists have expressed the opinion that the public health and dental progress have suffered. Certainly anything that will create indifference on the part of dentists to their responsibilities will injure public health; and anything that will give the public the impression that dental care is merely a mechanical procedure without biologic significance will degrade dentistry.

The material published in the *Journal of the American Dental Association* under the title, "An Evaluation of the Effect of Dental Foci of Infection on Health," was essentially a library study or one made by searching publications for the opinions of various people. Although this method has some merit it is not the definitive, clinical kind of approach that should be used to evaluate the subject of focal infection. A more acceptable method would be to use a large sample of patients in a hospital or clinic and submit them to a complete medical and dental examination to determine: (1) if there was any demonstrable relationship between dental infection and systemic disease, and (2) if there was significant improvement in some forms of general disease following the removal of dental infection. Such a comprehensive and detailed study would require several years and the examination of thousands of patients. It would also require the whole-souled cooperation of dentists and physicians.

Our clinical experience tells us that areas of inflammation, of infection, of suppuration *anywhere* in the body represent disease with potentiality of general systemic involvement. The dental tissues are no exception. Our fundamental biologic knowledge assures us that there is no such affair as disease of a part; that when one organ or structure is diseased the entire organism is involved to some extent. This is the concept of organismal unity or totality. To lose this point of view is to retreat into the biologic dark ages. We know that the circulatory system that supplies the dental tissues is the same system that

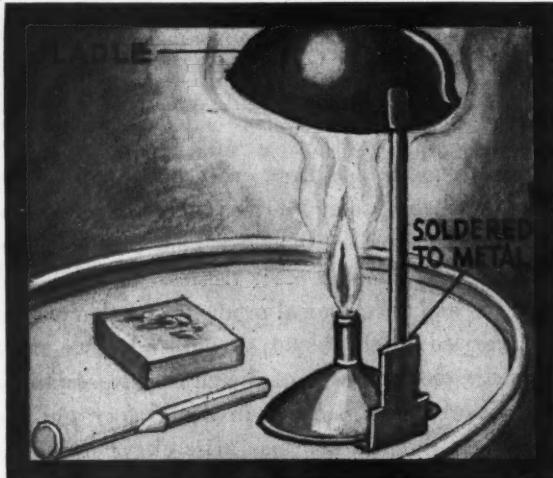
carries blood to and from every part of the body. We know that some of the bacteria present in dental infections are the same kind that will produce grave lesions in other tissues. We know that bacteria and the chemical products of inflammation are carried in the blood stream. What we must prove is the incidence of direct invasive relationship between the bacteria in dental foci and the secondary diseases that may arise elsewhere in the body. Our empiric experience that such a relationship exists and that thousands of people have been benefited by the removal of dental foci must be sustained by scientific evidence.

The esteemed professor of medicine at Temple University, Richard A. Kern,¹ is one who still "believes that something does remain of the concept of focal infection and deserves to be restated." This Doctor Kern has done in an admirable fashion. We dentists should be particularly impressed with these words to us:

"Whatever else of good or bad came out of the early abuses of the theory of focal infection, there resulted a tremendous stimulus for better dentistry. It is hard for younger physicians to understand why an older generation of physicians got so excited about oral sepsis. They do not know how much bad dental practice was then being perpetrated. It was not unusual to find dentures fitted over exposed, unextracted roots. Crowns were placed on obviously infected teeth. The filling of root canals without proper sterile technique gave rise to much acute as well as chronic periapical infection. Of course, many practitioners and most teachers of dentistry knew better and worked properly, but the general average of excellence in dental practice then was far below that which obtains today. Present high standards must not be relaxed."

It will be tragic irony if after fighting for forty years for recognition as a health profession dentistry were to return to the category of a mechanical craft.

¹Kern, Richard A.: What is Left of the Theory of Focal Infection, Philadelphia, W. B. Saunders Company, The Philadelphia Number of Medical Clinics of North America, November, 1950, pp. 1705-1712.



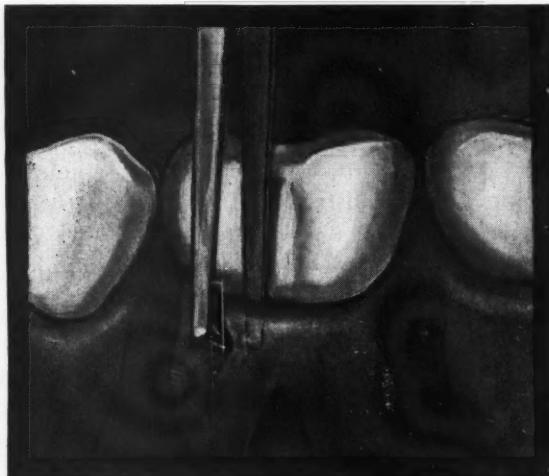
1

Clinical and Laboratory SUGGESTIONS

Bunsen Burner Protector

S. M. Dooreck, D.D.S., Brooklyn

- To protect the dentist and the patient from burns from the Bunsen burner on the instrument bracket the handle of a metal soup ladle is soldered to the stem of the burner. The inverted ladle makes a shield over the flame.



2

An Instrument to Determine Pocket Depth

S. Silver, D.D.S., Montreal, Quebec

- Remove the point from one beak of a pair of cotton pliers. Bend the point of the other beak at right angles and sharpen to a fine point. To determine pocket depth, insert the straight beak into the pocket to the full depth. Close the beaks to produce a puncture point. These bleeding points are guides in making the incision for the gingivectomy.



3

Postdamming an Immediate Denture

J. W. Siegfried, D.D.S., Santa Monica, Cal.

- To improve the retention of an immediate denture it is often necessary to create a better postdam. This may be done by roughening the palatal margin of the denture with a bur and adding one of the self-processing acrylic materials to the area.

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to SUGGESTIONS . . .

A Safe Phenol Bottle

S. H. Averbach, D.D.S., Philadelphia

4. Place a section of a surgical sponge on the bottom of a bottle and saturate with phenol. By touching a cotton pellet held in the cotton pliers to the gauze, phenol may be picked up to use in the cavity preparation. Should the bottle be tipped, no phenol will spill on the bracket table, the operator, or the patient.

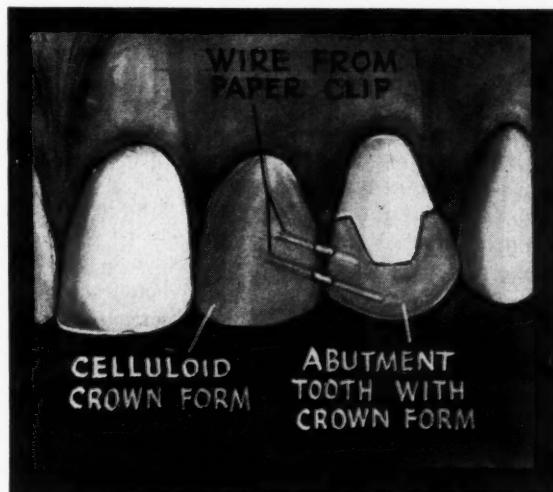


4

A Temporary Bridge

S. Robert Sadwin, D.D.S., Woonsocket, R.I.

5. Adapt a crown form to the tooth to be used as an abutment and another to the space that is to be supplied by the pontic. Drill two holes in the proximal surfaces of the crown forms and fit pieces of paper clip wire into these holes. Fill the crown forms with the material of choice. The wires will hold the temporary pontic and the temporary abutment together.



5

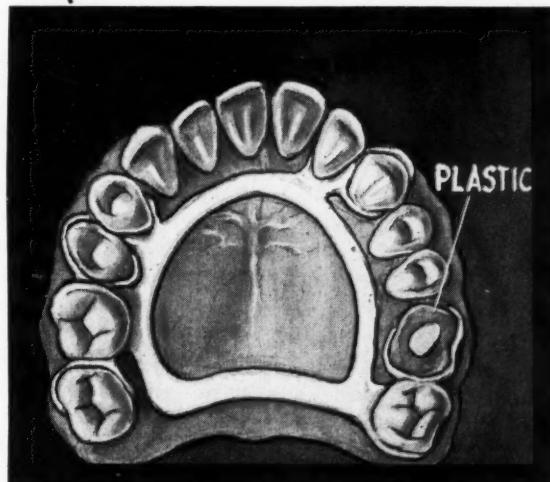
A Temporary Crown Used in a Partial Denture

Leon J. Pinsker, D.D.S., Merion, Pa.

6. After preparing a tooth which was previously clasped for a full crown it is necessary to protect the tooth and supply the appliance with retention. This may be done by adding a self-processing acrylic to the clasp. While the material is soft the denture is carried to position and the acrylic is adapted to the tooth. The denture is carefully removed after thirty seconds and the material is allowed to cure outside the mouth. After the material is cured it is carved to form and polished. When the denture is inserted, retention is maintained and the prepared tooth is protected.

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 428 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evans-ton, Illinois.



6



Advice Following Thrombophlebitis

Thrombophlebitis has been found to produce considerable damage to the leg even after the condition has been treated with a reasonable degree of success. Minimal venous damage can affect a leg as seriously as almost complete venous obliteration.

These findings cast some doubt on the efficacy of ligation of deep veins. The improvement occasionally seen following vein ligation could be due to periarterial sympathectomy that of necessity is done on the femoral artery when it is freed and retracted to expose the vein.

The part played by associated lymphatic blockage in the production of postphlebitic complications should be stressed. This role is due to involvement of a large lymphatic channel coursing on the anterior aspect of the femoral vein.

The edema resulting from chronic lymphatic obstruction and venous stasis favors the growth of organisms gaining entrance to this devitalized tissue. Therefore, the correction of chronic edema by means of either postural drainage of the leg or good compression bandages is most important in treatment.

Active exercises of the leg are necessary to promote lymphatic and venous return. Regardless of the therapy used, the underlying factors in postphlebitic complications are still present. Continued care of the leg is an absolute necessity.

All patients should be given a thorough explanation of their condition. The patient should not stand for more than thirty minutes without sitting down for fifteen minutes and elevating the leg. One should establish the habit of flexing the toes and standing on tiptoe frequently. The day should be planned so as to allow for two to three half-hour periods so that one may lie down with the leg elevated to a 45 degree angle (on the back of a straight backed chair). The leg should be elevated when one is seated. At night the foot of the bed should be raised about six inches. A bland cold cream should be applied

MEDICINE

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every second day at night to the affected skin. Above all, avoid irritation of the leg (sunburn, hot water bottles) and bumping, bruising, or scratching of the leg.

These are important facts for the dentist. Care of the legs and feet is probably the determining factor in many cases as to the length of time one may practice. Learning to use the operating stool is one means of preserving the feet and legs.

Luke, J. C.: Evaluation of Deep Veins Following Previous Thrombophlebitis, Arch. Surg. 61:787-793 (November) 1950.



Chlorophyll as a Deodorant

In the past the use of water-soluble derivatives of chlorophyll for medical purposes has been confined to local external application. Most of the work done with chlorophyll fractions has been directed toward their tissue-stimulating properties.

Recent studies indicating the value of chlorophyll fractions in wound healing have also included results of

deodorant effects. It has been noted that chlorophyll is a consistently effective deodorant when used on foul-smelling wounds.

Only within the past few months it has been demonstrated that specially prepared fractions of water-soluble chlorophyll A are nontoxic for humans when administered orally. There is a definite neutralization of malodorous substances and obnoxious body odors.

Groups of people in various occupations were selected for tests. Some represented vigorous activities and others less vigorous. Underarm odor was selected as it is easily accessible for testing and is a commonly accepted area associated with objectionable body odors.

It was conclusively demonstrated that with an accumulated dose of 600 milligrams of chlorophyllins in forty-eight hours an average of 90 per cent decrease in measurable underarm odor could be expected. The administration of placebos brought about a prompt return of the undesirable body odors.

No untoward effects from the oral administration have been reported. The use of the drug is a boon to those troubled with constant or periodic body odors. Two hundred milligrams daily effectively reduce the measurable underarm odor in most persons. Even in those troubled with odors from pathologic conditions the administration of 300 milligrams daily offers an effective means of controlling these odors.

Montgomery, Royal M., and Nachigall, Henry B.: Oral Administration of Chlorophyll Fractions for Body Deodorization, Postgrad. Med. 8:401-404 (November) 1950.



Electro- encephalography

Progress in any branch of surgery usually implies a change in emphasis from the gross to the minute and from the anatomic to the functional. Such a change has been noted in neurosurgery.

The previous concern with gross cerebral diseases, such as tumor, cyst, trauma, and abscess is changing to an interest in the more subtle disturbances of brain function associated with such diseases as convulsive disorders and psychoses. Probably one of the most important factors contributing to this change in viewpoint has been the rapid advances made in the field of electroencephalography.

The science of electroencephalography is concerned with the electric changes taking place in the functioning brain. It provides the neurosurgeon not only with useful information as to the nature and site of gross lesions of the brain but also enables him to extend his therapeutic field to functional derangements without visible abnormality.

The use of electroencephalography to localize lesions of the brain depends on the fact that the electric rhythms normally produced by neurons are sensitive to the metabolic changes that may ensue when brain tissue is encroached upon, injured, infected, or when its blood supply is depleted. An early result of these pathologic processes acting on the cortical neurons is to suppress the normal rhythms. Later, the neurons are stimulated to produce a slow discharge (delta waves) at the margin of the lesion.

When the lesion becomes sufficiently large to destroy considerable parts of the cortex, localization will usually be indicated by an area of electric silence with surrounding abnormality. It follows that the rapidity of expansion of a tumor and the ability of the surrounding neurons to compensate for the encroachment are the primary factors that effect the degree of electric abnormality which ensues. The electroencephalogram is able to provide only indirect evidence concerning the pathologic nature of the lesion.

About 95 per cent of cortical brain tumors give rise to abnormalities detectable by electroencephalography. In about 85 per cent of cases, localization is sufficiently accurate (within one lobe) to guide the neurosurgeon in planning his craniotomy flap.

When the blood supply to the cortex is restricted, delta waves usually appear before clinical evidence of functional disturbance can be detected. Deep lesions of the brain also produce electric abnormalities. The abnormality rate in deep lesions is almost as high as for those in the cortex. However, the same accuracy of localization is not obtained due to the projected nature of these disturbances. Abnormalities resulting from cerebral trauma are in general similar to the other disturbances. They vary according to the extent and the depth of the lesion.

Electroencephalography has recently found important application in the field of general anesthesia. The brain potentials undergo a series of characteristic changes with deepening anesthesia both in barbiturate and ether anesthesia. These changes may be successfully employed to guide the anesthetist and forewarn him of dangers that might otherwise go undetected. A further development in this technique employs brain waves to control actively the dose of ether so that an entirely automatic administration is achieved.

Editorial: Electroencephalography, Surg. Gynecol. and Obstet. 92:115-117 (January) 1951.



Aureomycin in Tooth Extraction

The extraction of teeth for the removal of a focus of infection in persons with damaged heart valves or congenital heart disease may cause bacteremia and precipitate subacute bacterial endocarditis. Sulfadiazine and sulfapyridine have been used prior to and following dental operations to prevent bacteremia. However, these drugs were not always effective.

Penicillin in oil has also been used. It reduces the occurrence of bacteremia substantially. Occasionally it causes allergic reactions.

Recently aureomycin has been advocated in these individuals. Usually the dosage is a total of 2 grams. This total is divided in three or four doses

on the day before extraction, the day of the operation and the day following the operation. Immediately following tooth extraction the blood culture for *Streptococcus viridans* is negative in the large majority of patients.

These facts are significant when it is realized that about 20 per cent of all cases of subacute bacterial endocarditis can be traced to recent dental operations. For this reason, before such an operation, every patient should be questioned and examined for valvular or congenital heart disease. If such a condition is found, prophylactic treatment should be given. Aureomycin is at present the drug of choice because: (1) it reduces the incidence of *Streptococcus viridans* bacteremia, (2) it can be given orally, (3) it apparently does not produce drug-resistant organisms and (4) it has a relatively low toxicity.

Roth, O.; Cavallaro, A. L.; Parrott, R. H.; and Celentano, R.: Aureomycin in Prevention of Bacteremia Following Tooth Extraction, Arch. Int. Med. 86:498-505 (October) 1950.



Headache of Ocular Origin

A large number of patients consult medical clinics because of headaches. And probably the oculist is consulted more frequently for headache than for any other single complaint. In at least 25 per cent of these persons the eyes are the cause of the headaches.

Most eyes are over used, either from too much use or from use under poor working conditions. Three factors in the patient's history help to determine whether the headache is functional or organic: (1) The manner in which the history is told, (2) the amount of time required to tell it, and (3) the measure required for relief.

Considerable information can be gleaned from the patient by inquiry as to the length of time he uses his eyes and the type of work he does. Most headaches are caused by simple,

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easily explained conditions and can be remedied without much difficulty.

Unilateral head pain of ocular origin is not uncommon. Pain radiating through one eye may be due (1) to a ciliary spasm, (2) localized neuralgia, or (3) the spasm of a single ocular muscle. As a rule, there is a shooting, knifelike, stabbing pain which is intermittent and, in the case of ciliary spasm or a spasm of a single muscle, is usually associated with the use of the eyes. In cases of localized neuralgia it is wise to look for a malocclusion causing a deformity of the temporomandibular joint.

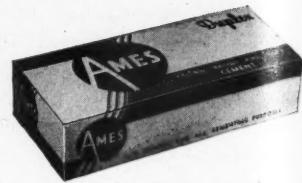
Nearsighted persons do not have headache or head pain unless the nearsightedness is unequal or severe or unless they are abusing their eyes. Persons with myopia have difficulty when they are outside in looking long distances or when in bright light. This exposure may produce headache. Those who watch air races and either forget to wear dark glasses while peering skyward or deem it unnecessary may suffer severe headache, nausea and vomiting, and almost complete collapse. Nearsightedness in common with a muscle error may cause trouble.

Farsighted persons are apt to have frontal headaches which are moderate to severe in character. These headaches are present almost daily in the afternoon or evening. Farsightedness sometimes is definitely associated with certain types of work. The diagnosis is easy to make, and the treatment is a pair of glasses used therapeutically and not as an aid to vision.

If there is an inequality in the amount of error in the two eyes the pain may be severe over one eye. Such a condition is frequently the cause of a headache.

Errors in refraction usually produce frontal, vertical, or bitemporal pain which may be associated with slight dizziness. Nausea is usually relieved by going to bed or resting or taking a single tablet of acetylsalicylic acid.

It is made worse by sewing, playing cards, and other close application.



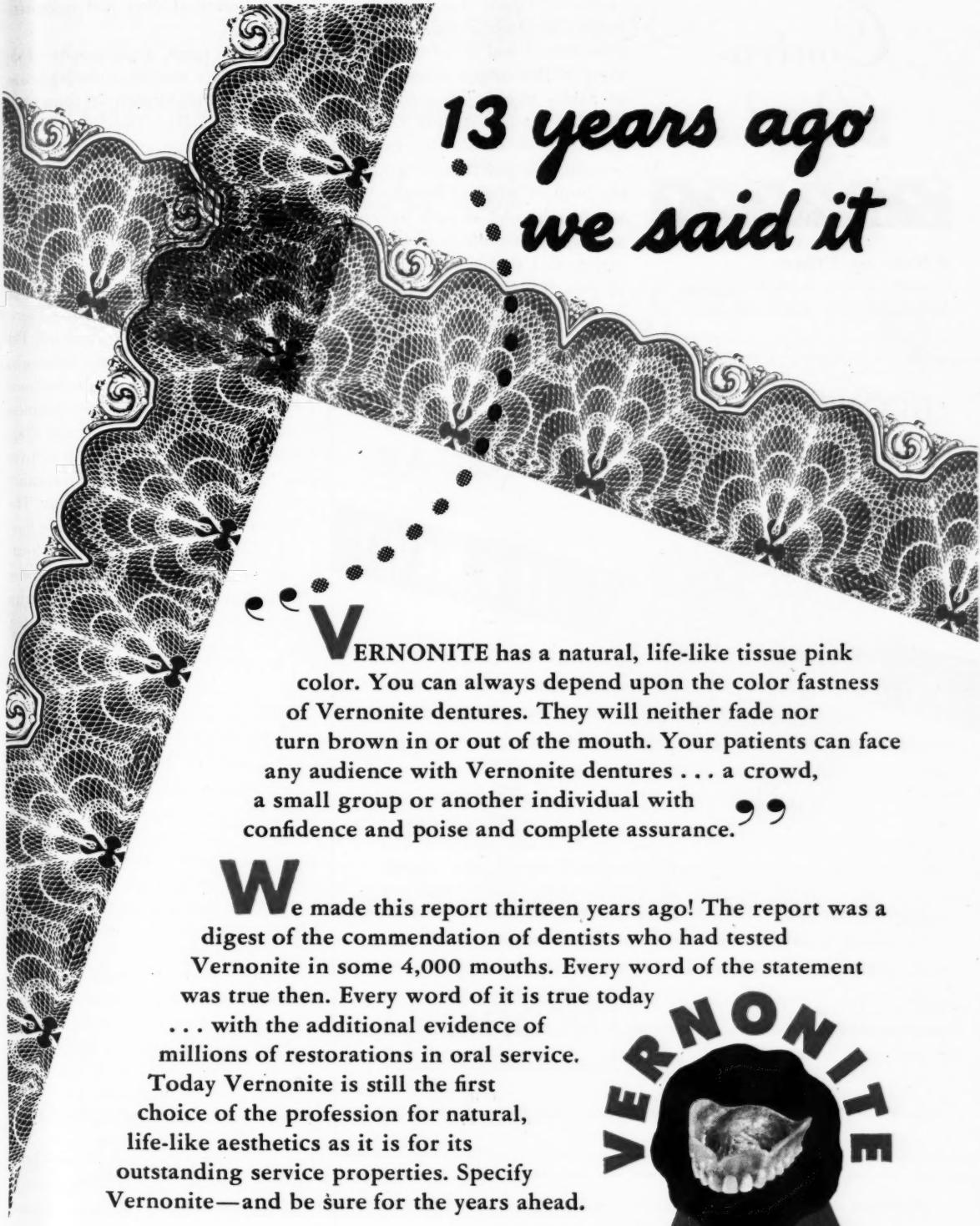
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An error of refraction associated with a muscle error is almost certain to produce symptoms of headache, such as pain or nervousness, irritability, exhaustion, nausea, and loss of weight.

Every child before entering the first grade should have his eyes refracted with atropine so that he can be protected against abusing inadequate or deficient eyes. The group of persons who have faulty, or inadequate ocular musculature include (1) the girl with the nervous breakdown, (2) the child who is inattentive, (3) the person in business who has a headache at noon which is relieved by lunch and then has a recurrence at about 3 or 4 o'clock in the afternoon, (4) the clock watcher, (5) the student who cannot concentrate, and (6) the convalescent patient who has headaches after reading in bed.

Ruedmann, A. D.: Headache and Head Pain of Ocular Origin, J.A.M.A. 144:517-519 (Oct. 14) 1950.



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A Note on Ethics

Recently I was invited to speak to the students of a dental college on the

subject of ethics. The invitation reminded me that it had been a long time since I had heard or read anything on this subject except the Code of Ethics that is occasionally published in a dental journal. Ethics is a subject that should be frequently presented before dental groups in the form of refresher lectures. There is no reason why an early undergraduate indoctrination in ethics will be perpetuated throughout the dentist's lifetime. It is like religion: it requires constant repetition of principles and

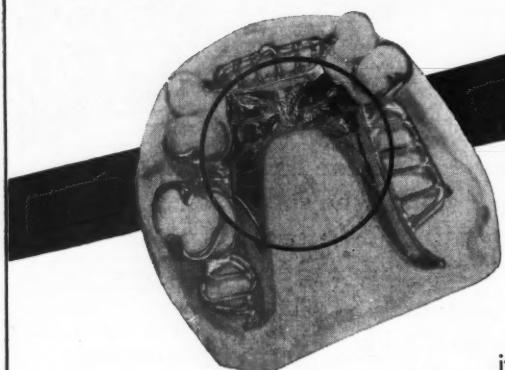
fresh points of view and interpretation.

A blasé spirit, a philosophy of the market place and the counting-house, has crept into dentistry in some parts of the country. Dentists thus infected will sneer and say that in the world of the tooth and the claw ethics is a subject bloated with pious platitudes. The same people tell us that business men sell merchandise, therefore dentists should "sell" dentistry; that manufacturers carry on national advertising campaigns, therefore dentists should do likewise. The fact is that dentists profit most who insist on maintaining the professional rather than accepting the business attitude. If people feel that our diagnoses are tempered by selling motives we may expect to see buyer resistance erected for our treatment plans. The dentist who has the least trouble having people accept his proposed treatment is the one who has built up the reputation of professional integrity which is another way of saying that he has developed his ethics.

We have injected into our language the expression "do-gooder" which is an uncomplimentary term or derogatory label for one who talks and acts the good life. In our cynicism we have damned as a pious fraud anyone who expresses principles of high conduct. The majority of people, including dentists, hold and practice honorable principles, but somehow are afraid to talk about them. Granted that good action is more eloquent than fine words, there is still a place in conversation for people to discuss values and high truths—ethics. There are almost as many philosophies of dental practice as there are dentists who practice. It might be well if we spent more time expressing these philosophies among ourselves with a view of profiting from the other fellow's experience and point of view with the view of strengthening our own patterns of professional conduct.

For those who dislike the ponderous title, ethics, we might express the principles of professional conduct under the title "How to conduct yourself in dental practice." The emphasis is, you note, on *yourself*, the

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Poor Health Isn't Caused by Teeth

CHICAGO, ILL. (AP) — You're probably wrong if you blame infected teeth for your aches and pains.

That view was expressed Thursday in an exhaustive study prepared by 12 University of Michigan dental and medical scientists for the American Dental Association.

The report said there is little, if any, scientific evidence to support a 40-year-old theory that removal of infected teeth will relieve arthritis, rheumatic heart disease, and kidney, eye and skin disorders.

Dentists of Boston, Baltimore, and Chicago discuss dental foci of infection and systemic health as reported in the *Journal of the American Dental Association*.

Doctor William Byron Kinney tells of cases within his experience which convince him that "all periapical lesions are to be regarded as potential sources of infection."

Doctor John W. Cooke discusses the effect of the newspaper publicity on dentists and their patients. He concludes: "As a thought-provoking piece of work, the current ADA effort ranks A—A for effort. As an addition to the art of public relations, it has laid an egg, possibly a large egg."

Doctor Jack Shobin urges further research before final conclusions are drawn. He says: "Let us hope that the report is merely a rebellion against the panacea of indiscriminate extractions as practiced by overzealous focal infection adherents"—"a transitory phase out of which something positive will grow."

The original article and these three commentaries will probably furnish discussion material for dental round-tables for months to come. What is your personal opinion on the subject of focal infection?

★ ★ ★

Social Security—are you for or against coverage of self-employed dentists? The House of Delegates of

THREE VIEWS on Focal Infection

the American Dental Association has gone on record as being officially opposed to coverage, but many individual practitioners disagree with the Delegates' decision. Edward N. Novotny, Manager, Social Security Administration, Evanston, Illinois, explains just what Social Security would mean to a dentist, in his article, "When You're 65—What?"

"The Argument Against Fluoridating City Water" is presented by Doctor George A. Swendiman. He believes that we should further ascertain the possible long-range effects of fluorine on the entire body before we urge its addition to any city water supply. He believes that fluoridating drinking water could, at best, be only a detour to dental health—and that the place to attack caries is at its apparent source—faulty diet.

★ ★ ★

Following Doctor Swendiman's article—and in fact referring to one of his earlier discussions of diet—Doctor William Poulsen tells his experience in following the Swendiman formula in planning the diet of 250 children in an orphans' home.

The remarkable results were convincing arguments for proper nutrition—until he tried to use these arguments in his work with the public schools. School children—and their parents—are simply not diet-conscious. He says, "They can have their Gallic War translated for them, but they will always have to do their own eating." He terms his latter experiment "My Sad Experience in Dental Health Education."

★ ★ ★

There's also another of the interesting articles on investments, "How To Be Free of Investment Details"; a fine description of an "Outdoor Reception Room"; and all of the regular departments you enjoy each month.

idea being that ethics springs from self-analysis and self-discipline. Too much has been said about how the patient should act, not enough about how the dentist should behave. There has been too much emphasis on managing the other fellow, not enough about managing ourselves. The more enlightenment the dentist has about himself as a person, the more he will understand his patient. The more we understand the personality of the patient, the more likely we are to treat him with respect and consideration. Whoever is treated with understanding, respect, and consideration is likely to respond in kind. Good will generates reciprocal good will. Irritation, short temper, misunderstanding are sparks that set off explosions in kind. The old sayings of the soft answer turning away wrath, of the universal brotherhood of man, of the doing unto the others as you would like done unto you express profoundly sound psychologic and ethical principles.

It seems to me that ethics in dental practice would best be presented from the base of sound psychology rather than through the high clouds of metaphysics. Whatever helps us to understand our own motivations, values, and actions will help us to understand those of our patients. When we understand patients as people—with fears, anxieties, hopes, ambitions—we begin to see them as projections of ourselves. Our fears, ambitions, hopes, anxieties may be different from theirs but there are patterns of similarity that stamp us with the sign of the universal brotherhood. People are unique and individual in small facets of their behavior and often in large patterns, but underneath there is a uniformity, a unitary likeness, and unmistakable similarity.

It is by no means an impossible task to set down a list of behavior traits shown by all mankind. Hunger, response to stimuli, certain forms of fear, the power of speech are simple examples. Behavior traits that do not fit into the pattern of the universal and are therefore unusual may vary in degree from individualistic, to eccentric, to neurotic, to psychotic. For example, if I insist on wearing a red

carnation in my lapel on all occasions we can consider that a rather queer and individualistic trait. It is harmless but within the framework of normal. If I wear a derby hat to bed we consider that to be eccentric. It is still a harmless kind of behavior without overpourings to disturb other aspects of my personality. If I fear close spaces, cats, high places, open country, but am otherwise oriented with reasonably sound judgment and the ability to carry on my affairs, I am neurotic. If I hear voices from the sky, see visions in the heavens, think people are plotting to poison me, I have lost contact with reality and have become psychotic.

We observe, therefore, a group of commonly held behavior traits shown by all human beings, and individual variations that vary from the peculiar to the bizarre. It is our job in clinical practice to recognize the universal traits of behavior, the unusual traits, and the traits that have no relationship to reality. To begin with, a self-inventory will uncover some startling things. We will find that we are not altogether as perfectly structured and as perfectly functioning as we had imagined ourselves to be. If we are introspective enough we may, in fact, discover that we are an extremely annoying and trying person. Then we should set out to correct and integrate *that* person, *ourselves*, before we set out to reform our neighbor. Once again the Scriptural writing on casting the beam out of thine own eye before attacking the mote in thy brother's eye, is sound psychology and good ethics.

Every now and again I hear an "inspirational" speaker or read an "inspired" writer and find myself raising private doubts that inquire into his sincerity. I find myself objecting that many of these people do not live up to their own preachers. They talk so eloquently from the lectern and write so beautifully on the page; then I find them in the flesh to be as petty and mean as the rest of us. But that should really be no cause for disillusionment. Nobody, including ourselves by all means, ever quite lived up to the *imago* of himself. Even if the one who is "inspira-

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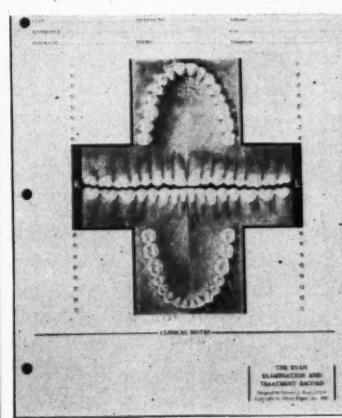
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tional" does not live up to the ideas that he expresses is no reason that the ideas and principles are not sound and desirable.

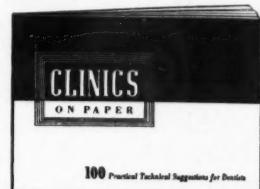
The dental teacher who taught that "give good service and the fee will take care of itself" is as out of date as the old time hell's fire and brimstone clergyman. Ethics does not mean incompetence in practice. It means that people should be treated fairly. It means that people should be told what is the matter with them, what should be done about it, and what obligation the dentist and the patient hold in the transaction. It means that service will be rendered by the dentist according to agreement and that the service will be paid for by the patient according to agreement. To carry on a guessing game between the dentist and the patient is unsound, uneconomical, and unethical. Ethics is decent and honorable conduct in all relationships. Dental ethics means simply that all dealings in the dental office will be conducted in fairness to the patient and to the honor of the dental profession which includes the dentist, past, present, and future.—E. J. R.

dations of between-meal eating of sugar foods when possible to do otherwise.

4. Control diets of long-hospitalized patients so that they are low in refined sugars and soft, mushy starches and high in fresh fruit and green vegetables in addition to being well balanced.

5. Instruct nurses to provide oral hygiene measures after meals for hospitalized cases.

6. Instruct parents to take their children to see a dentist interested in children and preventive dentistry as



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early as two and one half years of age.

7. Recognize when children are receiving proper dental care and consult with the dentist involved when a question arises.

8. Instruct parents early as to what factors are involved in dental caries and dental diseases and what measures they should take to prevent it. This should be well understood by parents when the child is one year of age.

9. Aid the dentist when asked in the planning of a diet for a patient of extreme susceptibility that meets the above requirements.

From Abstracts and Reviews. *American Journal of Orthodontics* 36:630-631 (Aug.) 1950.

Abscessed Teeth

Problem

Children, apparently extremely ill, are frequently seen with swollen jaws resulting from infected teeth. A dentist has told them to wait until the swelling is reduced before extraction. The following questions are suggested in connection with this problem:

1. Should not pus anywhere be drained promptly and with antibiotics is there not much less danger of septicemia if the tooth is extracted than if it is left in?

2. Should not the tooth be extracted and the patient referred to a physician for antibiotic treatment?

3. Is proper alinement of the teeth of sufficient importance that a child should be allowed to suffer many days?

Discussion

Following are the opinions of two authorities concerning this problem:

1. This is one of the many instances in which the patient will benefit by the cooperative efforts of the dentist and physician. Before the advent of the antibiotics, teeth were not usually extracted during the acute phase of such an infection although, when indicated, incision and draining of abscesses were performed. Today with adequate preoperative and postoperative antibiotic therapy, extraction of the offending tooth when necessary is usually not contraindi-

cated. Many dentists prefer not to administer drugs parenterally and consequently welcome the cooperation of the physician. The physician, however should have the opportunity to examine the patient and prescribe and administer proper medication preoperatively. Such infected teeth most often cannot be saved. Obviously the tooth must be sacrificed if the patient's health is endangered. The deciduous and first permanent molars are the most frequent offenders. Although early loss of these teeth may lead to malocclusion, it can be prevented by maintenance of the space created by loss of the tooth by means of a dental appliance.

2. There can be little question that gums should be drained by incision as soon as it is sure that pus is present. Often the infected tooth may be removed at the same time, but sometimes this procedure must be delayed until cellulitis of the soft parts has subsided and there is definite evidence of localization. There is no question, also, that depot penicillin in doses of at least 400,000 units one hour before the time of surgery offers considerable protection against bacteremia. In case of badly infected teeth, the depot penicillin should be repeated at intervals of eight to twelve hours until the infection has subsided. The decision as to the time of the surgical procedure should be the joint responsibility of the dentist and the physician. No infected tooth should be retained for the purpose of alinement or for any other reason.

Adapted from Queries and Minor Notes, *Journal of the American Medical Association*, 146:508 (June 2) 1951.

Cancer Focus

BANG¹ CONCLUDES that cancer starts as a local affection, which, if left to itself, becomes universal. The primary cancerous tumor or ulceration with degeneration is designated as a cancer focus. In experimental tar cancer three phases are distinguished: (1) In the preparatory phase the tissue changes are reversible. (2) In the

¹Bang, F.: Cancer Focus, Partial Index, 45:501-540 (April 4) 1951.

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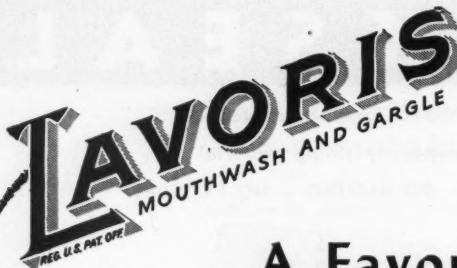
preinvasive or latent phase a latent cancer focus has formed and the tissue changes are irreparable; the tissue has become anatomically and physiologically disorganized and the cells divide abnormally. (3) In the invasive phase the cancer cells have suddenly attained the faculty of invasive growth.

Growth impulses, possibly in the form of hormonal influence, appear to be important in the development of cancer, and absence of these may be the reason that latent foci occasionally do not develop. It is suggested that

the faculty of invasive growth may depend on an increase in virulence of a virus-like factor, formed in the dividing cells during the preceding phase.

From Medical Literature Abstracts, *Journal of the American Medical Association* 146, No. 14:1358 (Aug. 4) 1951.

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